FINANCING DECISIONS OF U.S. REITS
A CAPITAL MARKET PERSPECTIVE

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The two years of Master program at Department of Real Estate at NUS is indeed an exciting and rewarding experience. From an engineering student who understood little about business and finance at the beginning of the program, to the completion of a master level thesis on REITs financing, the learning curve is surely steep. Among others, I have to learn from scratch the principles of finance, the capital market as well as the real estate industry. In addition, research methodology of social science is very different from that of engineering, particularly the various econometric models and financial databases. The most challenging part however, is perhaps the change of mind-set. Trained as an engineer, I used to have one definite answer to one question. However, in business and finance, this is never the case, as evident in the development of the capital structure theory, there are always different thoughts from different perspectives, each of which has it merits and shortcomings. At the end of the day, a combination of all these schools of thought is needed to truly understand the observed phenomenon in the real business world. Though this shift in the way of thinking is a bit painful at the beginning, I finally learned to appreciate this most charming point of the discipline.

Never writing an English article longer than one page before the Master program, academic writing in a foreign language also poses a challenge for the study. Quite often, I spent five minutes putting a comma into a sentence, and another five minutes to take the same comma out.

The writing of a thesis on the topic of financing decisions of U.S. REITs is spurred by my interest in corporate finance as well as the rapid development of the REIT market in the Asia Pacific, particularly here in Singapore. Although the emergence of Internet makes the idea of writing a U.S. topic thesis while living in a city-state in Asia possible,

lacking “local knowledge” about U.S. REITs is still one of major short-coming of this study. Most of the understanding about U.S. REITs is gained through reading a lot of academic papers, text books, analyst discussions, research reports and company financial statements.

However, despite all these challenges and difficulties, I managed to get this work done within the master program time-frame. The completion of the thesis would not have been possible without the help of support of the faculty at the department, my family and friends.

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SUMMARY

This thesis studies the financing decisions of U.S. REITs from a capital market perspective, with an emphasis on their market-timing behavior.

Traditional capital structure theories either approach firm financing and leverage decisions from a trade-off perspective, or suggest that there is a pecking-order in firm's preference for different forms of capital due to information asymmetry. However, in the situation of REITs, the avoidance of corporate tax eliminates the tax benefit of debt borrowing. Furthermore, high dividend distribution requirement for REITs greatly limits their ability to finance business growth with retained earnings. As a result, REITs have to go to public capital market for funds more frequently than companies in other industries, and will probably monitor capital markets more closely to take advantage of any inefficiency in the pricing of the securities being offered. Accordingly, a capital structure theory that looks at this problem from the capital market perspective, rather than focusing on either the cost-and-benefit of debt borrowing, or information asymmetry between managers and investors, is needed to better understand REITs financing decisions.

However, at current stage, the number of researches comprehensively studying the financing decisions of REITs is still limited compared with the volume of capital structure literature using pan-industry data. The few ones about REITs security offerings focus more on how such offering affect REITs share price, rather than on the motives and patterns of such fund raising activities per se.

Market-timing hypothesis of capital structure theory, which originates from a growing body of literature in the financial economics about the implication of capital market inefficiency in the valuations of corporate securities on firm financing decisions, offers a better framework than previous theories to describe and model REITs financing behaviors. This hypothesis relaxes the assumption of market efficiency characterizing

previous capital structure theories, and argues that firm chooses the time and form of external financing to take advantage of the variations in their relative costs in the capital market, which are possibly caused by capital market inefficiency.

Accordingly, this study conducts an extensive examination of the market-timing initiatives in U.S. REITs financing activities during the period from 1986 to 2003. By linking REITs financing decisions to a large number of variables reflecting equity market valuation and returns as well as debt capital market yields and spreads, we model REITs' choices of the time and form of securities to issue/repurchase with regard to the relative cost of such securities in the capital market.

Our analysis of the financing patterns of REITs reveals strong evidence that REITs exhibit strong market-timing initiatives in carrying out their financing activities. Specifically, the empirical results show that REITs time their equity offering with periods of buoyant valuation and sharp run-ups in the stock price in the market, and issue debt securities when the long-term rate is low and the credit spread is narrow, while most companies offer both debt and equity securities when investors are more risk-averse. In addition, REITs also time debt market conditions by means of debt-maturity choices: choosing long-term debt over short-term ones when long-term rate and credit-spread is low, and current term spread is high.

We conclude that market-timing hypothesis better describe REITs financing activities than either the trade-off theory or the pecking-order hypothesis. Our analyses from the capital market perspective uncover another important aspect of REITs financing decisions, which complements previous studies and helps us to achieve a better understanding of REITs financing decisions. Furthermore, these evidences about market-timing from a particular industry which is a superior testing ground provide strong empirical support to the development of market-timing theory, as well as a number of recent empirical works on the market timing hypothesis.

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CHAPTER ONE

Introduction

1.1 Background

This thesis studies the financing decisions of U.S. REITs from a capital market perspective, with an emphasis on their market-timing behavior. Our current understandings on capital structure decisions, developed from the seminal work of Modigliani and Miller (1958), view capital structure decisions either as a trade-off between the costs and benefits of using debt, or as a pecking-order to reduce potential underpricing due to information asymmetry. In the last few years, a new stream of literature has focused on the role of market-timing in firm's financing decisions. Different from existing theories on capital structure, this new stream of studies does not assume the capital market to be efficient. Rather, it rests on the premise that market inefficiencies have important implications on corporate financing. In particular, firms time their equity and debt issues to take advantage of any perceived misvaluation in their securities in an attempt to minimize their cost of capital. Recent studies have examined corporate financial decisions where "existing shareholders can create value for themselves not only by having the firm undertake positive NPV projects, but also by timing external financing decisions to take advantage of time-varying relative costs of debt and equity caused by market inefficiencies". (Ritter, 2002a).

Market-timing hypothesis pushes capital structure theory to a new stage in that it offers more insights into firms' financing decisions as well as capital market efficiency. However, empirical evidence about market-timing hypothesis is still in its infancy stage

compared with those of earlier stages of capital structure theory.

1.2 Motivation of Study

"By nature, real estate is a fairly straightforward industry, we have one primary source of income and that's rent, the public REIT structure make this an extremely transparent business, which gives the investors the ability to understand companies….real estate is a very capital-intensive industry. To be most effective, you must be able to access the capital markets on a superior basis."

—Sam Zell, Chairman and Founder of Equity Office Properties Trusts (Annual Report, 2002).

As a unique industry, REITs possess a number of advantages compared to firms in other industries as a testing ground for the market-timing hypothesis. In addition, a thorough understanding of REITs financing behaviors itself warrants attention given the ultimate importance of financing decisions for REITs firms.

As indicated in the above comment by Sam Zell, the chairman of the largest REIT in U.S, real estate is a capital-intensive business. Correspondingly, financing cost constitutes the single largest expense for REITs with interest expenses accounting for 30% to 70% of their total expense. Furthermore, to qualify for tax-transparent status, REITs are required to pay out at least 90% of their taxable income,[1] which leaves them with little financial slacks. As a result, REITs are more exposed to under-investment problem (Myers, 1977). REITs, therefore, are forced to raise external capital to finance new investment of any significant scale, either in debt or equity. Thus, REITs can be classified as an "external financing-dependent" sector.

[1] The Internal Revenue Code requires that REIT pays dividend of at least 90 percent of their taxable income, the distribution requirement before 2000 was 95 percent. Calculation of REITs taxable income involves some non-cash items such as depreciation. However, even from cash flow perspective, this high dividend payout requirement means that REITs distribute about one half of their cash flow.

REITs' heavy reliance on external financing not only makes them more active players in the capital market, but also creates strong incentives for managers to monitor capital market more closely and explore any capital market inefficiency and mispricing of their securities in making their financing decisions. For instance, a common complaint amongst REITs managers is that their stocks are under-priced in that investors focus on factors not related to real estate valuation, resulting in the fact that REITs stocks are traded at a discount to their NAV (net asset value).[2]

REITs provide a fertile ground to explore the market-timing hypothesis also because the bases for the two earlier capital structure theories, namely trade-off theory and pecking-order hypothesis, are less significant for REITs. Firstly, trade-off theory hinges on the tax advantage of debt. But in the case of REITs, their tax-transparency status eliminates this tax advantage of debt financing. Similarly, in the pecking-order theory, financing choice is anchored on mispricing of firm's growth opportunities due to asymmetric information. However, REITs are essentially "value" stocks for which the vast majority of their value comprises tangible assets such as property investment, while growth opportunities are limited during most of the time. In addition, for REITs, the negative signal conveyed by the seeking of external capital is muted due to the high payout ratio. As Ghosh, Nag and Sirmans (1997b) argued, the requirement for REITs to pay out most of their earnings leaves REITs with little financial slacks. Therefore, it is to be expected that even a successful REIT will have to raise new capital externally. Furthermore, Gentry and Mayer (2002) argued that the relative simple business model and asset nature of REITs arguably offer more accurate company account data such as NAV (net asset value).

[2] NAREIT REITs Analyst Discussion 2004.

However, the literature on REITs financing is relatively undeveloped compared to the importance of financing decisions for REITs firms. At current stage, the number of researches comprehensively studying the financing activities of REITs is still limited vis-à-vis the enormous volume of capital structure literature using pan-industry data. Furthermore, despite the advantages REITs offer as discussed above, few (if any) existing studies look at REITs financing activities from the market-timing perspective.

1.3 Scope of Study

This study focuses on the U.S. market as it is the most developed and most important REITs market in the world. Our sample only includes financing activities of equity-REITs. Mortgage-REITs and hybrid-REITs are excluded due to their significantly different business model and less importance in the U.S. REITs industry in terms of market capitalization (mortgage-REITs and hybrid-REITs combined only accounts for less than 7% of the total capitalization of U.S. REIT market).[3]

Our study covers the period from 1986 to the second quarter of 2003, the beginning of study period of 1986 is selected to coincide with the 1986 REITs Modernization legislation included in the Tax Reform Act, which is thought to fundamentally change the landscape of U.S. REITs industry. The passage of the act eliminated the requirement that U.S. REITs manage properties through third parties, allowed them to

[3] REIT industry analysts often classify REITs in one of the three categories: Equity, Mortgage or Hybrid. Equity REITs own and operate income-producing real estate, they have increasingly become primarily real estate operating companies that engage in a wide range of real estate activities, including leasing, development of real property and tenant services. Mortgage REITs lend money directly to real estate owners and operators or extend credit indirectly through the acquisition of loans or mortgage-backed securities, while hybrid REITs as the name suggests, owns properties and makes loans to real estate owners and operators. In terms of market capitalization, equity-REITs account for 94% of the total amount, while mortgage-REITs and hybrid-REITs make up the remaining 4% and 2% of the market capitalization. The requirement of IRC of qualifying as REITs in U.S. is in endnotes 1.

be vertically integrated and self-managed, behaving and performing as proactive operating companies. Prior to the legislation, U.S. REITs were passive asset accumulators, and their shares were viewed as bond equivalents by investors.

To the best of our knowledge, very few existing studies on REITs financing cover a similar study period, especially the more recent time period after 1998, during which phenomenal growth of REITs capital market and significant structural changes in REITs financing patterns have taken place.[4]

1.4 Research Objectives and Methodology

Focusing on the financing activities of U.S. equity-REITs from 1986 to 2003, this study first analyzes the patterns and characteristics of financing decisions of REITs in the U.S. Specifically, we assess the relative importance of the various forms of debt and equity capital for REITs. Next, we turn our attention to the market-timing aspect of REITs financing to see how REITs managers make their financing decisions in an effort to time the capital market conditions, rather than making broader trade-offs. By analyzing this market-timing behavior, we seek to assess the implication of capital market inefficiency on firms financing decisions, thereby contributing to the recent development in capital structure theory. Specifically, we hope to address the following questions pertaining to REITs market-timing in this thesis:

1. Do REITs exhibit market-timing behavior in making their financing activities?

[4] For instance, Brown and Riddiough (2003) studied public debt and equity offering of REITs from late 1993 through early 1998. Maris and Elayan (1990) examined determinants of REITs debt-equity choice using data from 61 REITs during 1981-1987. Oppenheimer (2000) investigated the debt levels of equity REITs, as well as their ability to meet interest and dividend payments for the period 1994 through 1998. Ghosh, Nag and Sirmans (1997b) investigated the frequency of stock and debt offering by equity REITs from 1992 to 1997. Hsieh, Poon and Wei (2000) compared the financing patterns of REITs with those of industrial firms during the period of 1965-1992.

2. If they do, how are REITs market-timing initiatives reflected in their choices of the timing and form of financing activities? As well as in more detailed aspects such as debt-maturity choices and size of the financing transactions.

Corresponding to the above research questions, four levels of empirical tests are carried out. First, REITs industry aggregate financing activities are examined to shed light on temporal patterns of U.S. REITs financing as well as the relative importance of various forms of capitals. Second, multinomial logistic models were devised to simultaneously model the timing and form choices of REITs financing. Next, we look at one particular aspect of market-timing initiatives: the debt-maturity timing as suggested in Baker，Greenwood and Wurgler (2003). Finally, determinants of the issue size are examined in regression analysis.

1.5 Organization of Study

The remaining of the thesis is organized as follow: Literature review in Part I, consisting of two chapters, provides the background of the study. Chapter two briefly reviews the evolution of capital structure theory, while Chapter three further explores the recent literatures on market-timing hypothesis. Part II shifts our discussions into the REITs industry. Prior literatures about REITs financing are summarized in Chapter four. Chapter five looks at the patterns of REITs financing. Part III begins with Chapter six describing the data and variables employed in the study. Empirically tests of the various aspects of market-timing hypothesis are carried out in Chapter seven. Chapter eight concludes with a summary of the major findings and their implications, while limitations and recommendation for further studies are discussed in Chapter nine.

Part I: Literature Review

CHAPTER TWO

The Evolution of Capital Structure Theory

"Financing is half of the field of corporate finance" (Myers 2003). Capital structure decision remains one of the most important focuses of corporate finance research. Starting from the Modigliani-Miller (1958) seminal capital structure irrelevance proposition, capital structure theory has gone through three major phases of development, namely the trade-off theory, the pecking-order hypothesis and the market-timing hypothesis (Ritter, 2003). These theories differ in their relative emphasis on the factors that could affect the choice between debt and equity, such as taxes, agency costs, differences in information, and the effect of market imperfections or institutional/regulatory constraints. Each factor could be dominant for some firms or in some circumstances, yet unimportant elsewhere. Myers (2003) pointed out that the different theories of capital structure overlap and at the end of the day, some blend of all the theories may be needed to explain capital structure.

In this chapter, we trace the evolution of capital structure theories over the past 50 years, starting with the trade-off theory in Section 2.1, followed by pecking-order theory of financing in Section 2.2, and market-timing hypothesis in Section 2.3.

2.1 The Trade-off Theory of Capital Structure

2.1.1 Theory

Development of the capital structure theory starts with Modigliani-Miller (1958)'s seminal paper on the irrelevance of capital structure decisions. They demonstrate, through a no arbitrage proof, that firm value is independent of financing decisions in an efficient and integrated capital market, provided that the assets and growth opportunities on the left-hand side of the balance-sheet are held constant.

Subsequent studies introduced capital market "imperfections" such as taxes, bankruptcy costs and agency cost. Trade-off theory, therefore, suggests that firms choose an optimal debt level by trading off the tax benefits of debt against the cost of bankruptcy and financial distress, although this optimal debt level is not directly observable, and might vary through time. However, in this theory, the assumptions of exogenous operating decisions and semi-strong form market efficiency continued to prevail (Myers, 2003).

Trade-off theory is originally considered as a static theory, but since it posits the existence of optimal capital structure, one natural implication is the dynamic rebalancing of a firm's capital structure, which is often labeled target-adjustment model or dynamic trade-off model. This dynamic trade-off theory suggests that, over time, both the optimal and actual leverage of a firm may change as a result of changes in the characteristics of the firm or investors' perceptions of the values of debt and equity. Thus, when firm's existing capital structure deviates from the optimal level, the marginal financing decision should move the debt-ratio towards this optimal. Under the assumption of a perfect capital market without adjustment costs, firm would

continuously adjust their capital structure towards the optimal debt level to maximize firm value.

However, if the assumption of frictionless capital market is relaxed (Fischer, Heinkel and Zechner, 1989), firms may not always respond immediately to shocks that cause their debt ratio to deviate from their optimal leverage ratios, especially when the adjustment costs outweigh the benefits. Hence, firm will wait to recapitalize, resulting in their extended excursions away from their optimal targets (Myers, 1984). Consequently, firms do not simply have an optimal level of leverage but an optimal range in which they are indifferent with respect to their recapitalization decisions.

2.1.2 Empirical Evidence

Trade-off theory can be easily translated into empirical hypothesis. The static version predicts a cross-sectional relation between average debt-ratios and factors such as asset risk, profitability, tax status and asset type, while the dynamic version predicts reversion of the actual debt-ratio towards a target or optimum.

Empirical tests of the trade-off theory are abundant. Harris and Raviv (1991) comprehensively summarized the various factors capturing the costs and benefits of debt financing. Rajan and Zingales (1995) further distilled these variables and settled on a few general factors that seem to explain debt-ratios cross-sectionally. These factors include the tangibility of assets, market-to-book ratio, the size of the firm and the profitability. Taken together, the empirical evidence suggests that large, safe firms with more tangible assets tend to borrow more than small, risky firms with mostly intangible assets. In addition, firms with high profitability and valuable growth opportunities tend to borrow less.

On the other hand, there are some empirical evidences that are inconsistent with the trade-off theory. Myers (1984) pointed out that the negative valuation effects of equity issues or leverage-reducing exchange offers, such as those found in Masulis (1980), do not support the trade-off theory. He argued that if changes in debt-ratios are movements towards the optimal leverage, both increases and decreases in leverage should be value enhancing. Moreover, a number of other studies, notably Kester (1986), Titman and Wessels (1988) and Rajan and Zingales (1995), found strong negative relationships between debt-ratios and past profitability, which is at odds with the prediction of trade-off theory. If managers can exploit valuable interest tax shields, we should observe exactly the opposite relationship, for high profitability means that firm has more taxable income to shield, and that the firm can service more debt without risking financial distress.

There are also a number of successful empirical tests of target-adjustment model, which include Taggart (1977), Marsh (1982), Jalilvand and Harris (1984), Auerbach (1985), and Opler and Titman (1994). All these studies find mean reversion in debt-ratios indicating that firms appear to adjust toward leverage target. Marsh (1982), using a logit model, found that the probabilities of debt and equity issues vary with the deviation of the current debt-ratio from the leverage target, which is proxied by the observed average debt-ratio over the sample period. Opler and Titman (1994), who also used a logit model but estimated the leverage target using a cross-sectional regression, came to broadly similar conclusions. In addition, Taggart (1977) and Jalilvand and Harris (1984) estimated target-adjustment model and found significant adjustment coefficients, which they interpreted as evidence that firms optimize debt-ratios. Auerbach (1985)'s model allowed for firm-specific and time varying targets. He also interpreted the significant adjustment coefficients as support for

target-adjustment behavior.

2.2 The Pecking-order Theory of Capital Structure

2.2.1 Theory

The second phase of capital structure research highlights the pecking-order theory of Myers and Majluf (1984) and Myers (1984). In the pecking-order theory, there is no well-defined optimal debt-ratio. The attraction of interest tax shield and the threat of financial distress are assumed second-order. Information asymmetry becomes the most important consideration when firm decides whether to issue equity or debt. Unlike the trade-off theory, operating decisions are no longer taken as exogenous.

Myers and Majluf (1984) developed the pecking-order theory based on information asymmetry while assuming efficient financial market. Their model began with a firm with assets-in-place and a growth opportunity requiring additional external financing. Investors do not know the true value of either the existing assets or the new opportunity. So they cannot exactly value the new securities issued. Optimistic managers who believe their company's shares are undervalued will issue debt rather than equity. In contrast, pessimistic managers may want to issue equity since they consider it to be overvalued. But rational investors will read this as a negative signal about managers' opinion regarding the firm's future prospects. In equilibrium, if firms have to raise external funds, they will prefer debt over equity, since the scope for underpricing of debt instruments is less than equity. Equity issues will only occur when it is costly for the firm to raise more debt, in particular when it is already at dangerously high debt-ratio where managers and investors foresee costs of financial

distress.

In summary, the pecking-order of firm financing suggests that: Firms prefer internal funding to external financing. If external funds are required, firm will issue debt first. As the requirement for external financing increases, firm will work down the pecking-order, from safe to riskier debt and finally to equity as a last resort. As a result, a firm's debt-ratio reflects its cumulative requirement for external financing (Myers, 2003).

Shyam-Sudner and Myers (1999) suggested that Myers and Majluf (1984)'s pecking-order works in reverse when the company has a surplus and wants to return cash to investors. They argued that if there is tax or other costs of holding excess funds or paying them out as cash dividends, there is a motive to repurchase shares or pay down debt. Managers who are less optimistic about the firm's future naturally prefer to pay down debt rather than buy back shares at a high price. The more optimistic managers, who are inclined to repurchase shares, force up stock prices when they try to do so. Faced with these higher stock prices, the group of optimistic managers withdraws. In equilibrium, if information asymmetry is the most important consideration, all managers end up paying down debt.

One important implication of the pecking-order theory is the announcement effect of firms' security issuance. Due to information asymmetry, announcement of stock issues could be good news for investors if it reveals a growth opportunity with positive NPV. It could also be bad news if managers are trying to issue overvalued shares. Myers and Majluf (1984) derived an equilibrium in which the bad news always outweighs the good ones. And share price will fall because of the negative

information inferred from the decision to issue equity. In addition, since debt is less exposed to misvaluation of the firm, the announcement of a debt issue should have a smaller downward impact on stock price than that of equity issuance.

2.2.2 Empirical Evidence

Empirically, pecking-order theory explains the preference for internal financing of public corporations. It also provides a plausible explanation of why the bulk of external financing comes in the form of debt and the relative infrequency of stock issues by established firms. Moreover, pecking-order theory satisfactorily explains why more profitable firms borrow less. Not because their target debt-ratio is low (there is no target debt-ratio in pecking-order framework), but because profitable firms have more internal financing available, while less profitable firms require more external financing, and consequently accumulate more debt.

Similarly, pecking-order theory's prediction about announcement effects around securities issues is confirmed by several studies. Dierkens (1991) further suggested that the price drop at announcement should be greater where the information asymmetry is severe. He confirmed this using various proxies for information asymmetry. Korajczyk, Lucas, and MacDonald (1992), using firm level data, showed that negative share returns after equity issuance are smaller immediately after earning releases, which may be times when information asymmetries are smaller. Furthermore, Myers and Majluf (1984) contended that price drop also depends on the value of growth opportunities relative to assets in place. They suggested that growth firms are more credible issuers and investors' worries concentrate on the possible misvaluation of assets in place. Several studies, including Pilotte (1992), Denis (1994) and Jung, Kim and Stulz (1996), confirmed this proposition by finding that the price

impact of stock issue announcement is less for growth firms than for mature firms.

Empirical tests pertaining to the pecking-order theory focus more on the time-series pattern of firm financing behavior rather than on the cross-sectional variation of debt levels as those for the trade-off theory. Shyam-Sunder and Myers (1999), using a panel of 157 U.S. firms from 1971 to 1989, tested traditional capital structure models against the alternative of pecking-order model of corporate financing. Their results showed that, the basic pecking-order model, which predicts external debt financing driven by the internal financial deficit, has much greater time-series explanatory power than a static trade-off model, which predicts that each firm adjusts gradually toward an optimal ratio. However, they also admitted that the standard target adjustment model cannot be rejected even when the pecking-order drives financing. Nonetheless, a subsequent paper by Chirinko and Singha (2000) pointed out that it is difficult to differentiate between the pecking-order theory and trade-off theory when using the experimental design of Shyam-Sunder and Myers (1999).

However, not all empirical evidences support the pecking-order hypothesis. Helwege and Liang (1996) tested the pecking-order hypothesis using sample of a group of firms that went public in 1983. The results of their finding are mixed. Consistent with the hypothesis, they showed that firms with surplus internal funds prefer retained earnings to external financing. On the other hand, the size of the internal cash deficit has no predictive power for the decision to obtain external financing. Finally, for firms that raise external capital, the authors found no evidence of a clear pecking-order.

Frank and Goyal (2003c) enlarged Shyam-Sunder and Myers (1999)'s test to include a

sample of 768 U.S. firms with a time period of 19 years. They found that external finance is large, and the amount of net equity issues commonly exceeds that of net debt issues, while pecking-order theory suggests that external financing should be only a small portion of the total capital formation of firm, and that debt is preferred to equity when firms do consider external financing. What's more, net equity issues track firms' financing deficits much more closely than net debt issues do. In addition, the authors showed that including financing deficit as one explanatory variable into the regression to explain capital structure did not change the significant role of those conventional factors found in previous studies.[5] Finally, they demonstrated that pecking-order works the best with large firms rather than with small high-growth firms for which information asymmetry is severe.

2.3 Market Timing Theory of Capital Structure —What if Capital Markets are Inefficient?

2.3.1 Theory

In the efficient and integrated capital market studied by Modigliani and Miller (1958), the costs of different forms of capital do not vary independently. In addition, since securities prices in efficient market are fairly valued at any point of time. There is no gain from opportunistically switching between equity and debt. Neither is there any benefit in timing the securities issues.

However, in capital market that is inefficient or segmented, market timing, i.e. choosing the time of issuance as well as the form and amount of securities to issue according to their relative cost, with the view to taking advantage of temporary misvaluation of

[5] These factors include market-to-book ratio, firm size, profitability, asset tangibility, and the lagged value of leverage

these securities by the capital market, benefits ongoing shareholders at the expense of entering and exiting ones. As Stein (1996) suggested, if firms seek to minimize their cost of capital, then market inefficiencies will have important implications for corporate financing.

2.3.2 Empirical Evidence

A number of recent empirical studies cast doubt on the efficiency of capital market.[6] Accordingly, the third phase of capital structure research drops the assumption of market efficiency and investigates firm's financing decisions from the perspective of capital market valuation. Ritter (2003) noted this sharp departure in the research of corporate finance: "researchers today are more willing to explore the implication of market inefficiencies than were researchers in earlier periods". Overall, these recent works suggest that both equity market-timing and debt market-timing appear to be an important aspect of corporate financial policy. Empirical evidence for the market timing hypothesis is discussed in detail in the next chapter.

2.4 Chapter Summary

This chapter briefly reviews the evolvement of capital structure theory by presenting the theory and evidence of the three phases of development, namely the trade-off theory, the pecking-order theory and the recently advanced market-timing hypothesis. Briefly, trade-off theory suggests that firms choose their optimal leverage by trading off the tax benefits of debt against the cost of bankruptcy and financial distress. On

[6] Most notably, Fama and French (1993) found the small firm effect, and Loughran and Ritter (1995) found long-run abnormal returns following corporate events, unlike the zero average abnormal return that should characterize an efficient capital market. More empirical evidences about stock market inefficiency are summarized in Robert A Haugen, 1995, *The New Finance: The Case against Efficient Markets.*

the other hand, pecking-order theory emphasizes the information asymmetry between managers and investors and proposes that firm prefers internal capital to external financing, and prefer debt to equity if external funds are needed. Empirical evidences supporting both theories are abundant, while at the same time, each of the two theories meets difficulties in explaining certain aspects of firm financing activities. Generally speaking, the majority of studies in the early two phases assumes an efficient capital market and has been focusing on the "demand-side determinants" (i.e. firm-side factors).

The recently advanced market-timing hypothesis drops the assumption of capital market efficiency and shifts their attention to the "supply-side determinants" (i.e. conditions in the capital market) of corporate financing decisions. This theory contends that firms tend to choose the time and the form of securities to issue according to their relative cost. In other words, they are timing the market to take advantage of temporary misvaluations of their securities or investors' over-optimism in the capital market. Further progress in the research of corporate financing decisions will require a deeper understanding of this market timing behavior. Thus, in the next chapter, we will further explore the different aspects of this hypothesis as well as review the empirical evidences.

CHAPTER THREE
Financing Decisions with Capital Markets Inefficiency

As suggested in the previous chapter, the broader market-timing hypothesis encompasses both the opportunistic switching between different forms of financing (retained earnings, debt and equity securities) and the optimal timing of such financing activities. A number of studies look at different facets of this theory. For instance, Ritter (2002a)'s windows-of-opportunity capital structure theory considered the choices among different forms of financing, while some other studies examined the timing aspect of both debt and equity issue, as well as more detailed aspects such as debt-maturity timing. This chapter gives a comprehensive review of the studies related to the market-timing hypothesis.

3.1 Windows-of-opportunity Capital Structure Theory

Ritter (2002a) proposed windows-of-opportunity capital structure theory of firm financing behavior. The main thrust of the theory is that firm's financing decision is based on the variation in the relative costs of debt and equity in the capital market. He argued that if investors sometimes overprice issuing firms' shares, so that equity is truly cheap, then equity can move temporarily to the top of the pecking-order. Alternatively, if debt is really cheap in certain period, debt can also move temporarily to the top of the pecking-order. Thus, firm follows different pecking-orders in different windows-of-opportunities in the capital market. Table 3.1 demonstrates the paradigm of this theory.

Table 3.1 Windows-of-opportunity Capital Structure Theory Paradigm

Normal Conditions	If Equity is Cheap	If Equity is really Cheap	If Debt is Cheap
1) Internal equity	1) Internal Equity	1) External Equity	1) Debt
2) Debt	2) External Equity	2) Internal Equity	2) Internal Equity
3) External Equity	3) Debt	3) Debt	3) External Equity

Source: Ritter (2002a)

Huang and Ritter (2004) empirically tested the windows-of-opportunity theory. They first demonstrated that neither the static trade-off theory nor the pecking-order theory provides adequate explanation for the observed variations in the financing patterns of U.S. firms. Next, using a number of variables to capture the variations in the cost of equity capital[7], they showed that firms prefer external equity when this cost is low and prefer debt otherwise. The authors concluded that only the windows-of-opportunity hypothesis based on time-variation in the relative cost of equity can satisfactorily explain their results.

3.2 Market-Timing from Behavioral Finance Perspective

With the rapid growth of behavioral finance literature in recent years, a number of studies try to investigate whether irrational investors' behavior affect the financing decision of firms. These studies address the question by asking how a rational manager interested in maximizing true firm value (the stock price that will prevail once any mispricing has worked its way out of valuations) should act in the face of irrational investors.

Stein (1996) developed a market-timing framework to address this issue. He showed

[7] These variables include (1) expected equity market risk premium; (2)first day returns of IPOs; (3) discount of close-end fund; (4)size discount; (5)past market returns; (6)average announcement effect of seasoned equity offering and (7)expected default spread.

that when a firm's stock price is too high, the rational manager should issue more shares so as to take advantage of investor exuberance. Conversely, when the price is too low, the manager should repurchase shares.

More support for market-timing hypothesis comes from a survey by Graham and Harvey (2001) involving 392 CFOs about their views on capital structure decisions. The authors noted that many of the CFOs practice market-timing in their financing decisions to take advantage of temporary misvaluations. For example, more than two thirds of the managers said that they would issue equity when it is overvalued, especially when their share price has risen in the recent period. Similarly, they would time their debt issuance to coincide with periods when the interest rates are low. In addition, the managers would decide on the debt market timing depending on their expectation of future interest rate movements. For instance, CFOs will issue short term when they feel that short-rates are low relative to long-rates or when they expect long term rates to decrease. The survey also revealed that large firms are more likely to engage in market timing activities.

3.3 Equity Capital Market (ECM) Timing

Baker and Wurgler (2002) defined "equity market timing" as the practice of issuing shares at high prices and repurchasing at low prices. Theoretical and empirical evidence on equity market timing are abundant at both aggregate and individual firm level.

At the aggregate level, studies have shown that there is substantial variation in the volume of equity issues over time. Issuance on average follows the increases in the

market as a whole. For instance, Baker and Wurgler (2000) examined U.S. corporate financing activities between 1928 and 1997, and presented empirical evidence that issuing firms display market timing ability. They found that, the fraction of new equity issues among total new issues (including both debt and equity) is higher when the overall stock market is more highly valued. Furthermore, their result showed that the "equity share" is a reliable predictor of future stock returns. A high equity share predicts low or sometimes negative stock returns, and this predicative power is even greater than either the market dividend yield or the market's market-to-book ratio. This finding suggests that managers time the market by issuing more equity at its peaks, before it sinks back to more realistic valuation levels.

In a subsequent study at individual firm level, Baker and Wurgler (2002) found evidences that equity market timing has long-term effect on firm's capital structure. The focus of their examination was the influence of the valuation of a firm's share (proxied by market-to-book ratio) on its equity financing decision and capital structure. They observed that, in the short-term, market-to-book ratio affects leverage mainly through net equity issues. They further explored the cumulative effect of market timing on firm's capital structure by using an innovative variable "externally financing weighted market-to-book ratio", which takes a high value when firms obtain external financing in a year with high level of market-to-book ratio and low value in years of low market-to-book. The result showed that this variable plays a significant role in explaining the level of firm debt-ratio. Thus, the authors came to the conclusion that market timing has a persistent effect on firm's capital structure and more strikingly, capital structure is the cumulative outcome of past attempts to time the equity market. Two implications of Baker and Wurgler (2002)'s finding are that firms are successful in timing the market to take advantage of overvalued equity, as well as their failure to

rebalance their leverage after such timing activities.

Similarly, Welch (2003) suggested that stock return is the primary known determinant of debt-equity dynamics. He demonstrated that over 1-5 year horizons, stock return can explain about 40% of debt-ratio dynamics. He pointed out that U.S. firms exhibit inertia in their capital structure decisions. When a firm's stock price increases, lowering the ratio of debt-to-enterprise value (the sum of market value of equity and debt), firms do little to offset the decline in the debt-ratio. Consequently, their debt-equity ratios vary closely with fluctuations in their stock prices. Furthermore, this stock price effect is often large and long lasting, even over many years. Indeed, Welch concluded that the stock price effect is considerably more important in explaining debt-equity ratios than all previously identified proxies together, such as tax costs, expected bankruptcy costs, earnings, profitability, market-to-book ratios, uniqueness, or exploitation of undervaluation. He further argued that, shocks to the stock market affect capital structure, but since firms do not take steps to re-establish a leverage target, the level of debt and equity do not influence subsequent leverage adjustments.

3.4 Debt Capital Market (DCM) Timing

Evidence of firm market-timing practices present not only in the equity capital market, but also in the debt capital market as well. However, as Baker, Greenwood and Wurgler (2003) pointed out, compared to the literature on equity financing patterns and the actual importance of debt financing in the U.S. economy, the literature on debt financing patterns is surprisingly undeveloped, especially from the market-timing perspective.

A number of early studies showed that firms debt offering as well as debt maturity choice are related to debt market conditions. For instance, Bosworth (1971), White (1974), Taggart (1977) and Marsh (1982) found that the level of debt issues is sensitive to various measures of interest rates. On the other hand, Guedes and Opler (1996), Barclay and Smith (1995) and Stohs and Mauer (1996) documented that the maturity of debt issues is negatively related to the term spread.

Employing both flow-of-funds data and aggregated COMPUSTAT data, Baker, Greenwood and Wurgler (2003) examined the debt maturity timing activities highlighted in the Graham and Harvey (2001)'s survey. They first demonstrated that inflation, real short-term interest rate, and term spread predict excess bond returns. When these market conditions variables are high, future excess bond returns are high over the next one to three years. The authors further showed that the long-term share in aggregate total debt issues is negatively related to each of these variables. Specifically, firms issue shorter term debt when inflation is high and term spread is wide. These evidences indicate that firms tend to borrow long when excess bond returns are predictably low. They interpreted these results as evidence that managers are trying to time the debt market in an effort to reduce the cost of capital, rather than reflecting time-varying optimal debt maturity or rational variation in expected bond returns.

Different from the above work which focused on the choice between issuing long-term versus short-term debt, Barry et al.(2003) investigated firm's decision of whether to issue debt at all. Based on the assumption that managers perceive mean reversion in interest rate, the authors investigated the timing of new issues of corporate debt and

the features of the debt in relation to the level of interest rates[8]. Employing a sample of 14,000 new issues of corporate debt in the U.S., the study found evidences suggesting debt market-timing at both aggregate and individual level. At aggregate level, they showed that the number of debt issues and the amounts of debt issued are higher when interest rate is in low deciles. At firm-specific level, their findings also supported the timing hypothesis as cross-sectional evidence shows that firms with greater financial flexibility, more free cash flow and low capital expenditure have greater tendency to time the debt capital market.

In another related study of firm debt maturity decision, Guedes and Opler (1996) examined the determinants of maturity of corporate debt issues, although their study is not from the market-timing perspective. Among other things, the authors showed "an unexpected result": the negative and statistically significant association between the term premium and maturity. They suggested four possible explanations for this results: (1) firms have difficulty borrowing long-term in high interest rate environments because the required rate of return creates an incentive to shift to risky projects; (2) (irrational managers, rational market) managers think they can "ride the yield curve" by avoiding the long end of the maturity spectrum when the term premium is high; (3) (rational managers, irrational market) managers issue short-term debt when the term premium is high because the expectations hypothesis does not hold; or (4) (rational managers, rational market) in a general equilibrium the firms may be inframarginal borrowers and gravitate toward the short end of the yield curve when it steepens. However, the researchers concluded that they do not have strong evidence in favor of any of these explanations.

[8] The levels of interest rates include both the absolute rates level and their relative level compared to historical rates within 10 years range, expressed in docile.

3.5 Chapter Summary

This chapter looks at the market-timing hypothesis in depth. We first discuss the windows-of-opportunity capital structure theory of Ritter (2002a). Next, evidences about market-timing from the behavioral finance perspective are presented. Finally, we review existing empirical evidences of both equity capital market timing and debt capital market timing.

The development of the market-timing hypothesis of capital structure theory is exciting and promising. However, empirical evidence concerning this hypothesis is still in its infancy stage. So far, only a handful of empirical studies, most of which already covered in the above discussion, have been carried out to test the validity of the theories, while the majority of these studies have been using firm data from a wide spectrum of industries.

As discussed in the introduction chapter, a number of researchers suggest that REITs offer a better testing ground for the market-timing hypothesis due to some distinctive characteristics of the sector. In the next part, we first review existing literatures on REITs financing and debt policy to see what we already know about REITs financing. Then, we examine historical REITs financing activities to identify any discernable patterns and characteristics, thus laying the backdrop of subsequent study. In the third part of this thesis, we contribute to the market-timing literature by carrying our empirical test of the hypothesis using data of REITs financing.

Part II: Background of REITs Financing

CHAPTER FOUR

Literature on REITs Industry Financing

This chapter shifts our attention from broader financial economics to the real estate domain. We first briefly introduce the development of U.S. REITs industry in Section 4.1. Section 4.2 discusses the various financing alternatives of REITs. Finally, Section 4.3 reviews pervious literatures about REITs financing activities and debt policies.

4.1 The Development of U.S. REITs Industry

REITs were created by U.S. Congress in 1960 to make investments in large-scale, income-producing real estate accessible to smaller investors. Basically, a REIT is a company that owns, and in most cases, operates income-producing real estate. Some REITs also engage in financing real estate. The shares of most REITs are usually traded on a major stock exchange. In the same way as shareholders benefit by owning stocks of other corporations, the stockholders of a REIT earn a pro-rate share of the economic benefits that are derived from the production of income through commercial real estate ownership. REITs' stable and relative high yield, its diversification benefits, and better valuation of NAV (net asset value) all make it an attractive form of holding real estate.

However, the first few decades of REITs development in the U.S. can only be

described as lackluster. A series of later regulatory reforms increased investors' interest in REITs and spurred rapid growth of the industry. Two most significant such events are the Tax Reform Act of 1986 and the REITs Modernization Act (RMA) of 2001. The Tax Reform Act allowed REITs to manage their properties directly, while the REITs Modernization Act (RMA) which took effect on January 1, 2001 further accelerated the development of REITs industry by permitting REITs to form taxable subsidiaries that may engage in previously precluded profit-making activities.

As of May 2004, there are about 180 REITs registered with the U.S. Securities and Exchange Commission (SEC) with their assets totaling over US$ 300 billion and market capitalization between US$ 140 billion to 180 billion. Among these, 142 equity-REITs account for approximately 91% of the total market capitalization, while 23 mortgage-REITs and 8 hybrid-REITs make up the remaining 7% and 2% respectively. Approximately two-thirds of these REITs trade on the national stock exchanges, as shown in Table 4.1.

The popularity of REITs has expanded in the last decade. In the early 1990s, REITs stocks were unpopular with investors for a number of reasons, such as small market capitalization, lack of liquidity, and partially bad memories of investment in real estate stocks in 1980s. However, now days, REITs have become an important part of investors' portfolio, which can be attributed to a variety of factors, including strong performance in REITs share price, the inclusion of REITs in major stock indices such as S&P500 and MSCI, significant diversification benefits, as well as less restrictions and increasing sophistication among institutional investors. [9]

[9] According to Ling D.C. and Ryngaet M (1997), the relaxation of the Internal Revenue Code (IRC) that in the past prevented institutional investors from investing in large blocks of e-REITs stocks also helped fuel the growth of the

However, the share of REITs in the investment real estate universe is still relatively small. Table 4.2 gives an overview of the principle real estate markets around the world at the end of 2003. Globally, investment real estate is a massive market of nearly 5.9 trillion U.S. dollars, however, listed property only accounts for approximately 10% of such a huge underlying real estate market. Among the listed property, U.S. is by far the most important market in terms of the size of the underlying real estate assets and the market capitalization of listed property, accounting for nearly half the size of the global market (43% and 49% respectively).

REITs industry in 1993.

Table 4.1 Overview of U.S. REITs Industry

By Index	Number of Companies	Market Capitalization (billion US$)	Average Daily Trading Volume (million US$)
Composite Index	173	238.1	1,206.8
Equity Index	142	216.8	1,013.0
Mortgage Index	23	15.6	172.1
Hybrid Index	8	5.7	21.6

By Listing	Number of Companies	Market Capitalization (billion US$)	Average Daily Trading Volume (million US$)
New York Stock Exchange	139	229.8	1,131.7
American Stock Exchange	24	5.4	53.9
NASDAQ	10	2.9	21.1

Source: NAREIT Statistics. May 2004. Available at http://www.nareit.com/researchandstatistics/index.cfm

Table 4.2 Overview of Principle Real Estate Market

Market	Underlying Real Estate (US$ bn)	% of Total Underlying Real Estate (%)	Listed Real Estate (US$ bn)	% of Total Listed Real Estate	Listed Real Estate As % of Underlying Real Estate (%)
U.S.	2,525	43	295	49	12
Continental Europe	1,500	26	50	8	3
Japan	705	12	58	10	8
Hong Kong/China	540	9	68	11	13
UK	490	8	80	13	16
Australia	100	2	45	8	45
Total	5,875	100	596	100	10

Source: Prudential Real Estate; UBS Estimates December 2003
* Underlying real estate represents real estate held for investment purposes by institutions only.

Table 4.3 U.S. REITs Equity Market Capitalization Outstanding

(Millions of U.S. dollars at year end)

	Composite REITs		Equity REITs		Mortgage REITs		Hybrid REITs	
Year End	Number of REITs	Market Cap (mn US$)	Number of REITs	Market Cap (mn US$)	Number of REITs	Market Cap (mn US$)	Number of REITs	Market Cap (mn US$)
1971	34	1,494	12	332	12	571	10	592
1972	46	1,881	17	377	18	775	11	729
1973	53	1,394	20	336	22	517	11	540
1974	53	712	19	242	22	239	12	232
1975	46	900	12	276	22	312	12	312
1976	62	1,308	27	410	22	416	13	483
1977	69	1,528	32	538	19	398	18	592
1978	71	1,412	33	576	19	340	19	496
1979	71	1,754	32	744	19	377	20	633
1980	75	2,299	35	942	21	510	19	847
1981	76	2,439	36	978	21	541	19	920
1982	66	3,299	30	1,071	20	1,133	16	1,094
1983	59	4,257	26	1,469	19	1,460	14	1,329
1984	59	5,085	25	1,795	20	1,801	14	1,489
1985	82	7,674	37	3,270	32	3,162	13	1,241
1986	96	9,924	45	4,336	35	3,626	16	1,962
1987	110	9,702	53	4,759	38	3,161	19	1,782
1988	117	11,435	56	6,142	40	3,621	21	1,673
1989	120	11,662	56	6,770	43	3,536	21	1,356
1990	119	8,737	58	5,552	43	2,549	18	636
1991	138	12,968	86	8,786	28	2,586	24	1,596
1992	142	15,912	89	11,171	30	2,773	23	1,968
1993	189	32,159	135	26,082	32	3,399	22	2,678
1994	226	44,306	175	38,812	29	2,503	22	2,991
1995	219	57,541	178	49,913	24	3,395	17	4,233
1996	199	88,776	166	78,302	20	4,779	13	5,696
1997	211	140,534	176	127,825	26	7,370	9	5,338
1998	210	138,301	173	126,905	28	6,481	9	4,916
1999	203	124,262	167	118,233	26	4,442	10	1,588
2000	189	138,715	158	134,431	22	1,632	9	2,652
2001	182	154,899	151	147,092	22	3,991	9	3,816
2002	176	161,937	149	151,272	20	7,146	7	3,519
2003	171	224,212	144	204,800	20	14,187	7	5,225

Market capitalization equals price of shares multiplied by the number of shares outstanding.
Source: NAREIT, available at http://www.nareit.com/researchandstatistics/marketcap.cfm

4.2 Financing Channels of U.S. REITs

Typically, public companies have three broader types of capital to finance their operations and growth: retained earnings, debt borrowing and equity offering. However, the requirement of distributing at least 90 percent of taxable income as dividend greatly limits REITs' ability to finance further growth with internally generated funds.[10] Consequently, REITs have to rely heavily on external financing channels to fund their growth. The capital market in the U.S. offers a wide variety of debt and equity instruments for REITs, especially with the rapid pace of financial innovations in the last few decades. Briefly speaking, REITs in the U.S. can select from four general types of capital to fund their operations: public common shares, public preferred shares, private debt and public debt.

One alternative classification of debt capital is to divide them into three broad categories according to their relative importance:

a. Optional Debt:

   This category includes bank credit-line, certificate of deposit, bank account. These forms of debt are available for short term, unexpected capital requirements.

b. Tactical Debt:

   Tactical debt consists of short to medium term debt for working capital requirements, cash flow managements, bridge acquisitions finance.

c. Core Debt:

   This category of debt includes bank loans, public bonds of either fixed or floating rate, with or without convertible terms, which could be in a mix of currency depending on asset base. In addition, the use of MTN (medium term notes) and

[10] Although REITs still have some discretionary cash flow because depreciation allowances reduce taxable income but not cash flow.

CMBS (commercial mortgage backed securities) are also common among REITs. This category of debt is usually long term, stable, and is considered to be the strategic bulk of debt that maximizes long term shareholders value.

Comparatively speaking, optional debt and tactical debt enable REITs to act quickly on property buying opportunities. However, they usually have less favorable financing terms compared to the long-term core debt.

On the other hand, the classification on the equity side is simpler, as it only includes two types of equity: the preferred and common share.

4.3 Literature on REITs Financing and Debt Policy

A number of previous studies examined REITs' financing activities as well as debt policy, as tabulated in Table 4.4. A review of studies (prior to year 2002) related to REITs financing and debt policy is also available in Su, Erickson and Wang (2003). However, the majority of these studies either inspect the announcement-effect or after-market performance of such fund-raising activities,[11] or examine the debt ratio and significant determinants of REITs borrowing. While relatively few works investigate REITs financing decisions in relation to capital market valuation of the securities being offered, and even fewer cover the entire period of 1986 to 2003, during which REITs capital market experienced phenomenal growth.

[11] For instance, Howe and Shilling (1988) examined the stock price reactions to announcement of new security offering by REITs. Ghosh, Nag and Sirmans (1999) investigated the filing announcement of 100 SEOs by REITs during 1991 to 1995 period, and Hsieh, Poon and Wei (2000) studied the stock price reaction to 57 common stock offerings by REITs over the 1965 to 1992 period.

Table 4.4 Existing Literature about REITs Financing:

Research	Sample and Study Period	Research Objective
Maris and Elayan (1990)	61 REITs during period of 1981-1987	Examine REITs financial structure to determine the factors influencing their debt-equity choice
Ghosh, Nag and Sirmans (1997b)	92 IPOs, 173 common stock, 109 debt and 40 preferred stock issues as well as 43 private placements during 1991 to 1996	Examine the financing choices of equity-REITs
Ghosh, Nag and Sirmans (1999)	100 REITs during 1991 to 1995 period	Investigate the filing announcement of REITs SEOs (seasoned equity offerings)
Hsieh, Poon and Wei (2000)	57 REITs over the 1965 to 1992 period	Study the stock price reaction to REITs common stock offerings
Oppenheimer (2000)	Equity REITs trading on NYSE for the period 1994 through 1998.	Investigate the debt levels of equity REITs, as well as their ability to meet interest and dividend payments
Brown and Riddiough (2003)	174 fixed-rate public debt offerings and 140 equity offerings by equity-REITs from late 1993 to early 1998	Analyze of public security offerings by equity-REITs, focusing on liability-structure effects and whether or not REITs target long-run debt ratios

Using data from 61 REITs during period of 1981-1987, Maris and Elayan (1990) examined REITs financial structure to determine the factors influencing their debt-equity choice. Despite the lack of tax incentives, they found that many REITs are highly geared. This implies the existence of non-tax forces encouraging the use of debt. The researchers further identified four factors that affect a REIT's borrowing decisions, namely the size of the firm, the growth rate of the firm, the uncertainty level about the cash flow, and the income derived from mortgage. They found that equity-REITs with high growth rate tend to use less debt, while those with higher uncertain future cash flows or larger in size tend to use more debt. As a result, high-growth REITs end up with lower debt-ratios than their low-growth counterparts.

Oppenheimer (2000) investigated the debt levels of equity REITs, as well as their ability to meet interest and dividend payments for the period 1994 through 1998. The

author showed that REIT debt levels have consistently fallen since the recession of the early 1990s. He also found increasing debt coverage levels which indicate reduced default risk, partially due to lower debt levels and improved cash flows. However, this trend significantly reversed itself in 1998 when the industry experienced sharp increases in debt and reductions in interest coverage ratios. He suggested that investors may react negatively to this sharp change in capital structure by selling REITs shares, which may translate into drops in REITs share prices.

Ghosh, Nag and Sirmans (1997b) examined the frequency of stock and debt offering of equity-REITs from 1991 to 1996.[12] They first showed that REITs prefer equity offering to debt issues: REITs issued equity three times more frequently than debt, and raised almost twice as much through equity than debt during the period of study. The authors suggested that this is because REITs have no tax incentive to use debt and the usual problem of adverse information associated with equity offering is mitigated by the fact that REITs have little retained earnings. They further separated the sample into two groups: REITs that went public before 1992 and those floated after 1992, in order to mitigate the problems associated with the large number of equity-REITs IPO in the early 1990s. Although their results showed a higher incidence of secondary stock offering by the post-1992 REITs than the seasoned ones, both groups appeared to favor equity offering to public debt offering. The researchers suggested that the difference between the groups may be related to the credit rating and associated cost and availability of debt to each group. Finally, on an individual firm basis, they showed that REITs that were most active in raising capital were associated with the best post-IPO share price performance, while those least active ones in the capital

[12] Their sample includes 92 IPO cases, 173 common stock offerings, 109 debt offering and 40 preferred stock issues, and 43 private placements of common and preferred stocks during the time period of 1991-1996.

market experienced significant stock price depreciations. The authors concluded that financing decisions by REITs managers are influenced by their perception of the expected changes in the overall market, especially the real estate sector. Managers of REITs that perform well tend to raise a larger amount of capital and prefer equity to debt financing.

In another study of REITs financing events during the period of 1965-1992, Hsieh, Poon and Wei (2000) compared the financing patterns of REITs with those of industrial firms. They found that in terms of frequency, REITs used more short-term debt and common stock (65%) than long-term debt and convertible debt (35%) when financing their capital needs. But when compared with tax-paying industrial corporations, REITs utilized less debt financing. Specifically, the authors identified that only 53% of the financing events of REITs were debt financing, whereas for industrial firms the figure was 81%. These evidences led them to conclude that equity financing appears to be much more common among REITs than among industrial firms.

Brown and Riddiough (2003) also conducted an analysis of public security offerings by equity-REITs from late 1993 to early 1998, focusing on liability-structure effects and whether or not REITs target long-run debt ratios. They found that, proceeds from REITs equity offerings are more likely to fund investment, whereas public debts are typically used to reconfigure the liability structure of the firm. The authors further showed that, public debt issuers are often capital constrained and target total leverage ratios to retain an investment grade credit rating. In addition, their results reveal that pre-offer liability structure affects the debt-equity choice decision, in that firms with higher pre-offer levels of secured debt tend to issue equity, while those with higher

pre-offer levels of unsecured debt tend to issue public debt. Finally, they found that REITs with higher credit quality issue longer-maturing bonds.

More recently, Gentry and Mayer (2002) employed U.S. REITs data to examine the link between stock prices, investment, and capital structure decisions. They found that the debt-to-market value ratio of REITs responds to deviations in price-to-NAV ratio as in the finding of Baker and Wurgler (2002). Specifically, a 0.1 increase in price-to-NAV ratio leads to a relatively modest 0.5 percentage point decrease in the following year's debt-to-market value ratio. Their results suggested that, overall, REITs appear to finance marginal projects with a mix of debt and equity that is similar to their average debt-equity ratio. In addition, the authors argued that their evidence was consistent with REIT managers attempting a limited amount of financial market timing based on quasi-public information on NAV.

4.4 Chapter Summary

This chapter shifts our attention to the REITs industry from previous discussions about the evidences in general financial economics. In Section 4.1, we first introduce the development of U.S. REITs industry, with an emphasis on the changes in the regulatory environment and investor bases. Then, an overview of the current size of the industry, as well as its relative size compared to the underlying real estate market is presented. Section 4.2 briefly discusses the whole spectrum of financing channels for REITs companies.

A thorough review of the existing literatures on REITs financing activities and debt policy is carried out in Section 4.3. However, the majority of these studies either

approach the problem from a more traditional perspective by examining the debt level of REITs and identifying the determinants of leverage, or examine the announcement effect of REITs security offering and after-market performance. Fewer works look at REITs financing activities from a market-timing perspective, as what we are going to do in the third part of this study.

CHAPTER FIVE

Financing Patterns of U.S. REITs

As Section 4.3 points out, literature on REITs financing decision is relatively undeveloped. Moreover, the majority of them only cover a study period before 1998, while REITs financing activities occurred during 1999-2003 account for 36% of the total amount of capital raised of the whole study period (1988--2003). In addition, an understanding of the big picture of REITs financing patterns at the macro-level is indispensable for an in-depth micro-level analysis of REITs market-timing activities. For instance, what is the overall financing pattern of the REITs sector? Does this pattern change over time? What is the relative importance of the various securities for REITs industry? To answer these questions, this chapter examines the time variation and relative importance of various forms of REITs financing, with the view to identifying discernable patterns and trends, thereby set the backdrop of later firm-level analysis.

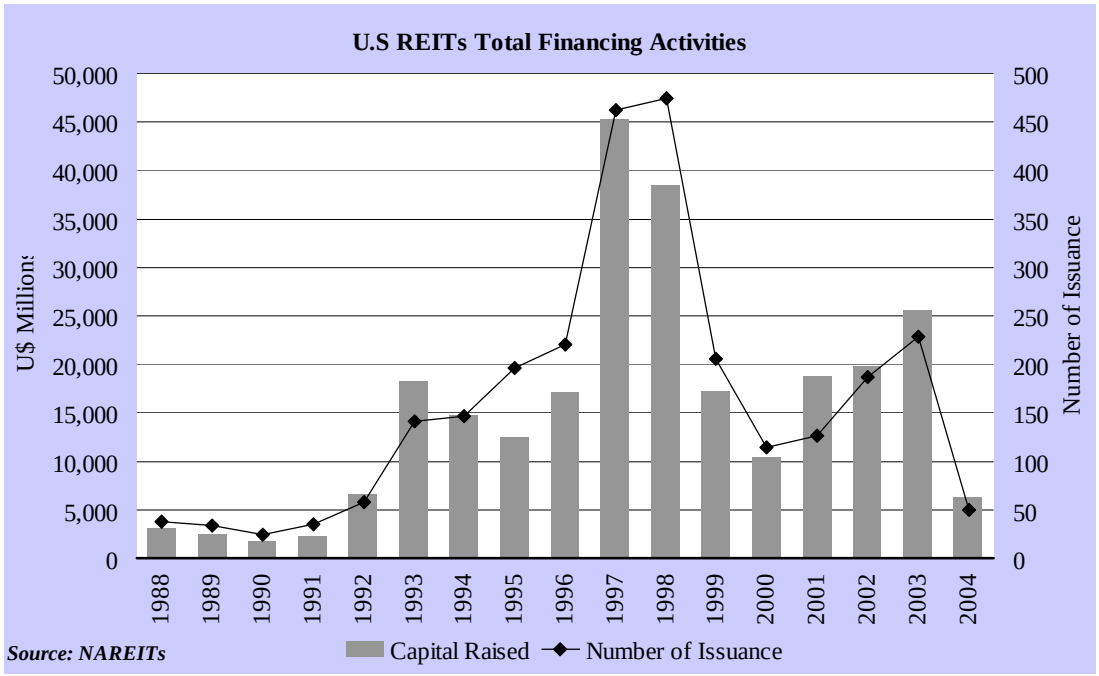
5.1 Temporal Pattern of U.S. REITs Financing

Table 5.1 and Chart 5.1 show the statistics and trends of historical security offering of U.S. REITs industry during the period of 1988-2004.[13] Between 1988 and 1991, the amount of capital issued was less than US$ 5 billion per year. The number started to climb from 1992 onwards, reflecting REITs sector's demand for public fund as private

[13] The time period is slightly different from the 1986Q1 to 2003Q2 in our subsequent regression analysis, as NAREIT *REITs Watch* started to provide REITs securities offering data from 1988. However, since the vast majority of REITs financing took place in 1990s, the lack of data for 1986 and 1987 does not have material impact on the analysis.

capital fled the industry after the real estate crisis. The figure then increased precipitously to reach a peak in 1997 with a combination of 463 issuance of the amount US$ 45.4 billion. However, both the number of offerings and the amount of capital raised declined significantly in 2000 with the plummet of global equity market. After 2000, REITs financing activities picked up again and the increases continued apace until 2003. Chart 5.2 further decomposes the issuance into IPO, SEO and public debt offering.

Chart 5.1 Historical Total Financing of U.S. REITs



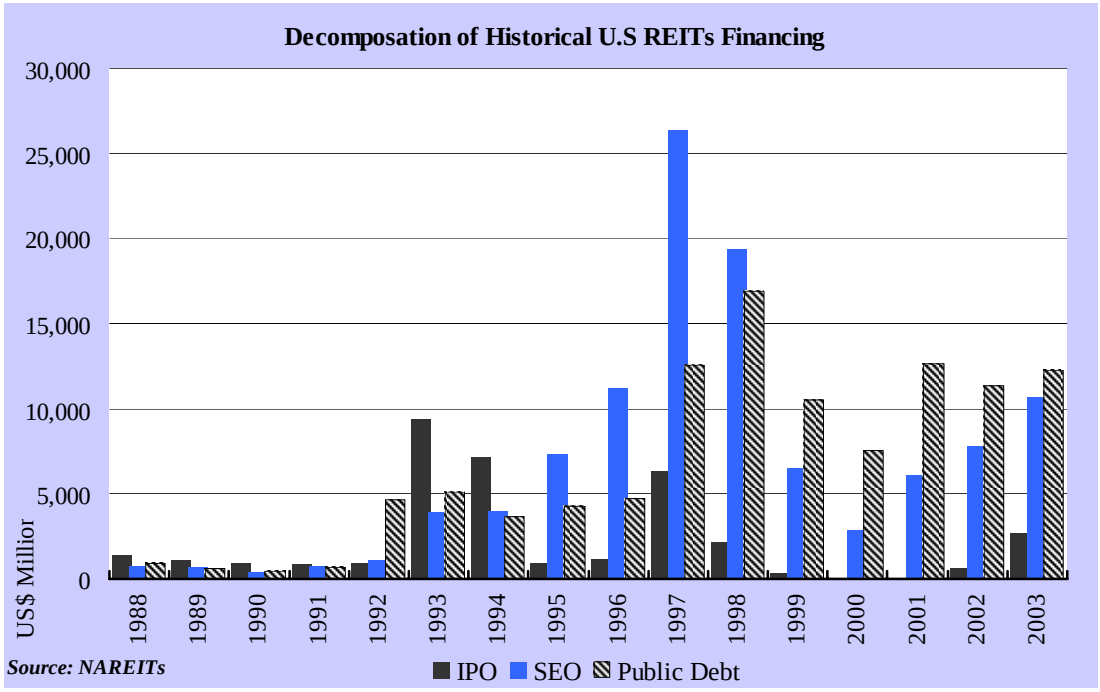
Source: NAREIT. Total financing activities include REITs IPOs, SEOs and public debt issues. Unlike COMPUSTAT data, NAREIT data doesn't include bank loans and private capital raised.

Table 5.1 Historical Securities Issuance by U.S. REITs

	Total Financing		IPO		Secondary Equity Offering		Public Debt Offering	
Period	Number	Capital Raised	Number	Capital Raised	Number	Capital Raised	Number	Capital Raised
1988	37	3,069	13	1,374	13	785	11	909
1989	34	2,441	11	1,075	15	722	8	644
1990	24	1,765	10	882	8	389	6	494
1991	35	2,289	8	808	20	786	7	694
1992	58	6,615	8	919	24	1,055	26	4,642
1993	141	18,327	50	9,335	50	3,856	41	5,135
1994	146	14,771	45	7,176	52	3,945	49	3,651
1995	196	12,505	8	939	93	7,321	95	4,245
1996	221	17,063	6	1,108	139	11,201	76	4,754
1997	463	45,271	26	6,297	292	26,377	145	12,597
1998	474	38,382	17	2,129	297	19,378	160	16,874
1999	205	17,214	2	292	100	6,444	103	10,477
2000	114	10,376	0	0	42	2,834	72	7,542
2001	127	18,752	0	0	79	6,082	48	12,670
2002	187	19,768	3	608	110	7,776	74	11,383
2003	228	25,562	8	2,646	146	10,663	74	12,252
2004	50	6,357	2	731	36	3,726	12	1,900
Total	2,740	260,527	217	36,319	1,516	113,340	1,007	110,863

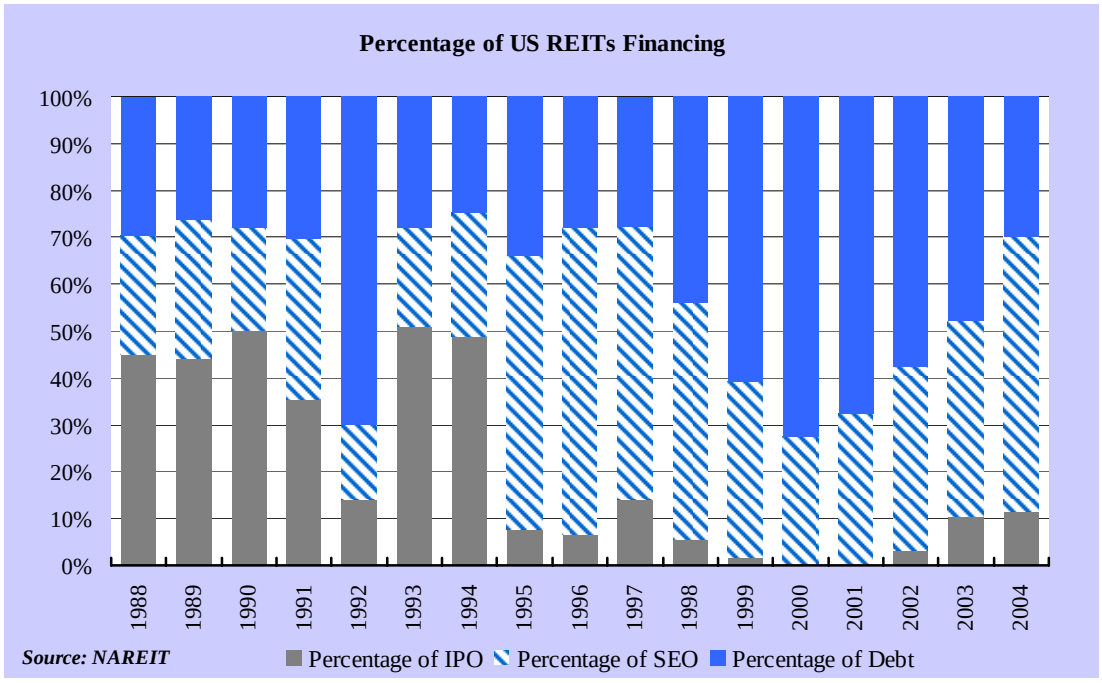
Sources: *REITs Watch*, NAREIT, available at http://www.nareit.com. Secondary equity offering includes common share offerings and referred share offerings. Debt securities include unsecured debt offering and secured debt offerings, but not bank loans and private debt. Data for 2004 ends at Feb 27, 2004.

Chart 5.2 Decomposition of U.S. REITs Financing



Source: NAREIT.

Chart 5.3 Percentage of U.S REITs Financing



Source: NAREIT.

The percentage of IPO, SEO and Public Debt in the total amount of public financing of REITs as shown in Chart 5.3. Consistent with Ghosh, Nag and Sirmans (1997b),

equity financing is the most important form of capital for REITs during the 1992-1998 period in that it accounted for nearly 70% of the total external financing.

REITs equity offerings tend to cluster together, as found in Bayless and Susan (1996) as well as Ritter (2002b). Among the equity raising exercises, REITs IPO activities are extremely volatile. In particular, two waves of REITs IPOs are observed during the period. In 1993 and 1994, US$ 16.5 billion was raised from a total number of 95 IPOs, accounting for nearly 45% of the total IPO proceeds in our sample period. The second IPO wave in 1997 and 1998, though smaller, witnessed another 43 IPOs with a total amount of US$ 8.4 billion. In contrast, not a single IPO is recorded between 2000 and 2001.

What drives the IPO volume of the REITs sector? Ritter (2002b) suggested that IPO activities are hypersensitive to changes in market conditions: “Rather than just lowering offer prices by 20% when the market drops by 20%, volume tends to dry up”. Lowry (2003) examined three hypotheses to address why IPO volume fluctuates so much: (1) Changes in the adverse-selection costs of issuing equity, (2) Changes in the aggregate capital demands of private firms, and (3) Changes in the level of investor optimism. She concluded that changes in aggregate capital demands and in investor optimism are the primary determinants of changes in IPO volume over time. Correspondingly, these two factors assumed different importance in the two REITs IPO waves. The first wave in 1993 and 1994 is largely due to the sector’s demand for public fund when private capital fled after the crash of the real estate market in the early 1990s. On the other hand, buoyant investors’ optimism played significant role in spurring the second wave observed in 1997 and 1998.

Although IPO activities fell sharply after 1994, REITs industry continued to raise significant amount of equity capital through secondary equity offerings (SEOs), with the amount peaking at US$ 26.4 billions in 1997.

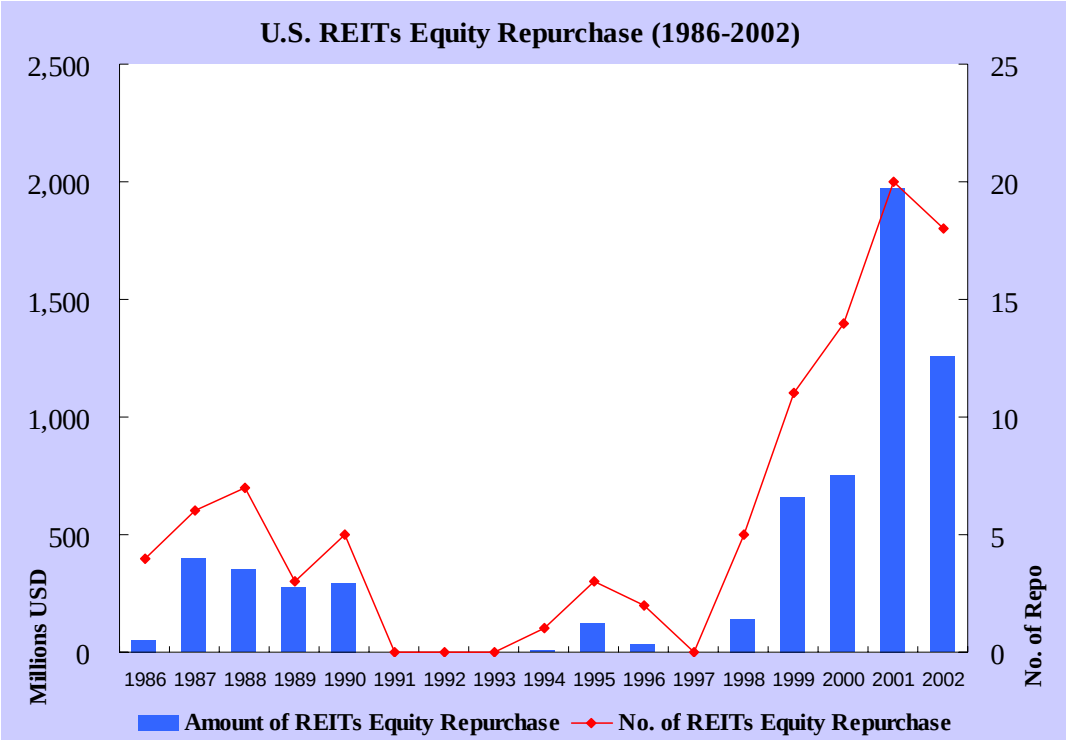
REITs debt offering increased in tandem with equity issues during 1992 to 1998, though it played a secondary role compared to equity issues. However, starting from 1999, REITs turned increasingly to debt capital market to finance their capital needs. As a result, debt financing outpaced equity as the major form of external finance for the period of 1999-2002.[14] This pattern can be attributed to the combination of a number of push and pull factors. On the one hand, the general weakness in the equity market, caused by the burst of TMT (Telecommunication, Media, and Technology) bubble, greatly reduces the potential demand for new equity offerings. However, this slowdown in investors' demand occurred at a time when the REIT industry was experiencing an increase in the number of mergers, acquisitions and joint ventures, which has accelerated the REITs industry's need for capital. On the other hand, the historically low interest rates provide ample liquidity in the debt market. In addition, the rapid development of the commercial-mortgage-backed-securities (CMBS) market and corporate bond market also contribute to this shift in the financing pattern. Finally, the changing mindset of REITs managers may also be an important factor, as the concept of issuing equity to do deals becomes less common as the REITs industry gradually matures.

As shown in Chart 5.4, another salient trend observed is the increasing number of share buyback by U.S. REITs starting from 1999, whereas the sector issued significant

[14] The debt offering data from NAREIT shown in the tables in this chapter is mainly public debt. The amount is less than that identified from the cash-flow statement from COMPUSTAT data, which include bank loans. Flow-of-fund data from Federal Reserve also provides some insight about the REITs bank debt.

amount of equity securities during the same period.[15] While there is no consensus about the motivation of this buyback wave, a commonly expressed view of market participants suggests that sharp declines of REITs stock prices during this period might be the primary reason.

Chart 5.4 U.S. REITs Equity Repurchase Activities 1986-2002



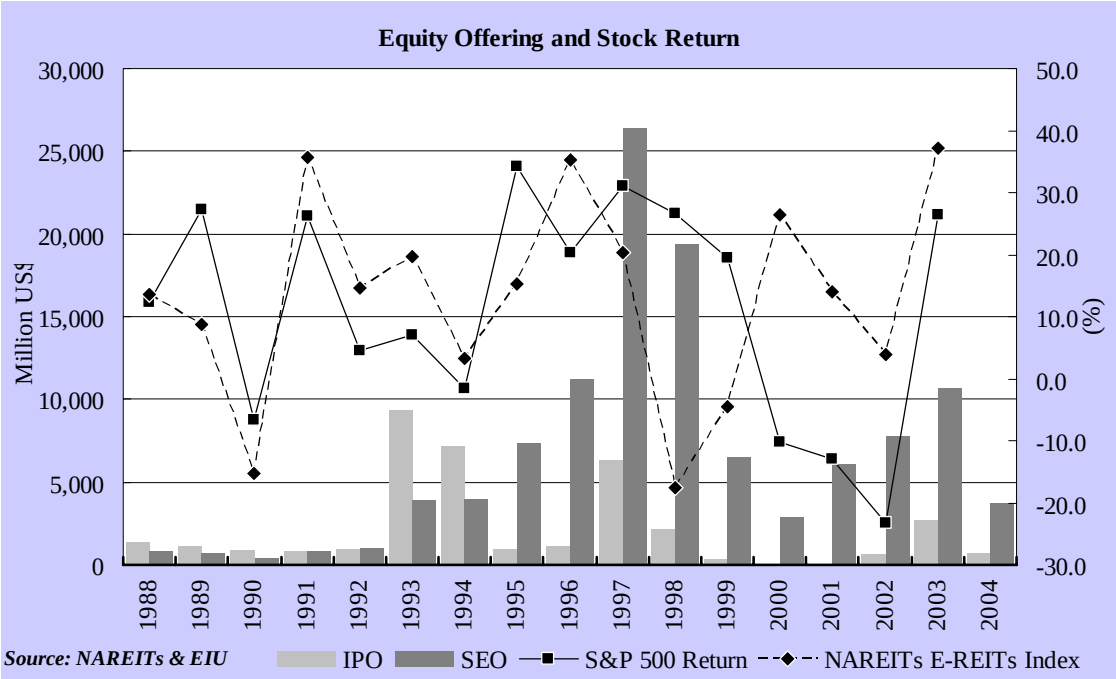
Sources: COMPUSTAT and author compilation.

Chart 5.5 plots REITs equity offering activities along with the annual returns of general stock market and REITs sector stocks. An interesting observation emerges from the chart: the aggregate amount of REITs sector equity offering tends to coincide with periods of high general-equity-market returns (proxied by S&P 500 Index), while the correlation between the offering and the returns of REITs sector

[15] NAREIT doesn't provide data about REITs share buyback activities. We identified a total of 101 such cases during the study period, using cash-flow statement data from COMPUSTAT after applying our criteria. Due to the usual small transaction size of buyback program (as share-buyback is often carried out in stages), there maybe understatement in the number of such events.

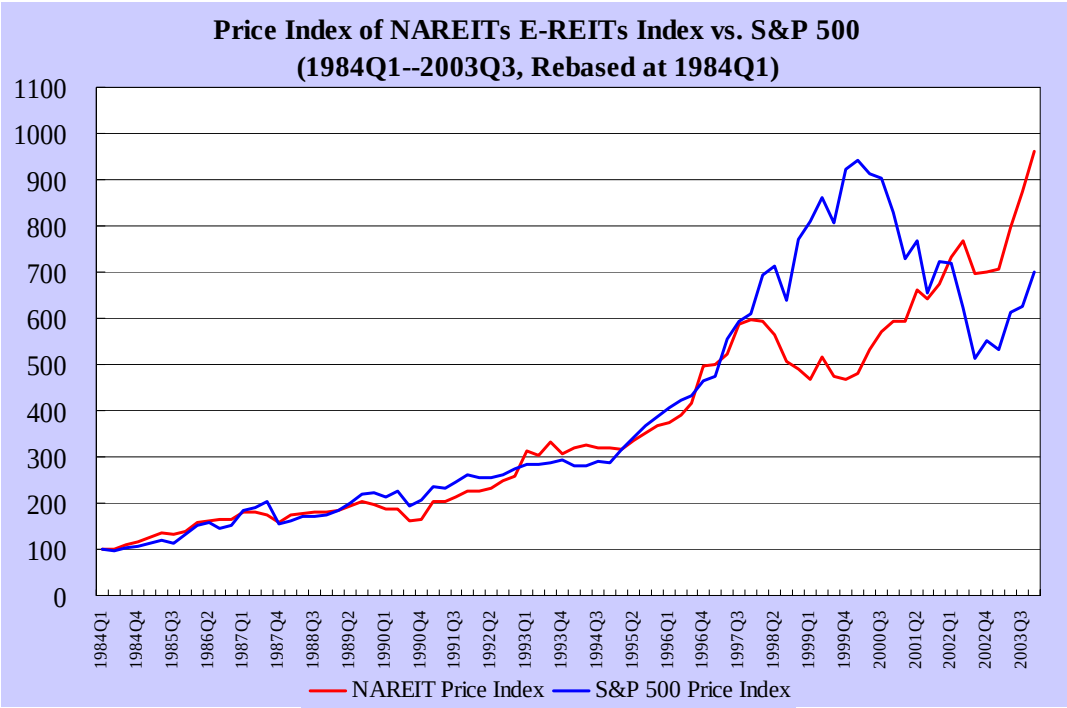
itself (proxied by NAREIT equity-REITs Index) is less pronounced. For instance, the four years of equity offering-surge from 1995 to 1998 all saw above 20% annual return in S&P 500, even the sharp deterioration of REITs sector share performance in 1998 didn't slow the pace of REITs equity offerings. On the other hand, the sharp declines in equity issuance activities during 2000-2002 coincided with below -10% returns in S&P 500, whereas the NAREIT equity-REITs Index registered healthy return during the same period.

Chart 5.5 U.S. REITs Equity Offering and Stock Returns



Source: NAREIT Data for 2004 is up to March 2004.

Chart 5.6 Price Index of NAREIT Index and S&P 500 Index



Source: NAREIT and COMPUSTAT

5.2 The Various Forms of Debt

REITs debt securities come in many different forms and features. Specifically, REITs have to make strategic choices between public and bank debt, short and long term debt, fixed and floating rate debt, as well as secured and unsecured debt. This section explores the relative importance of the various forms of debt, based mainly on the detailed breakdown of REITs public debt by NAREIT.[16]

NAREIT and COMPUSTAT provide no data specifically pertaining to REITs bank loan. However, flow-of-fund data published by Federal Reserve sheds some light

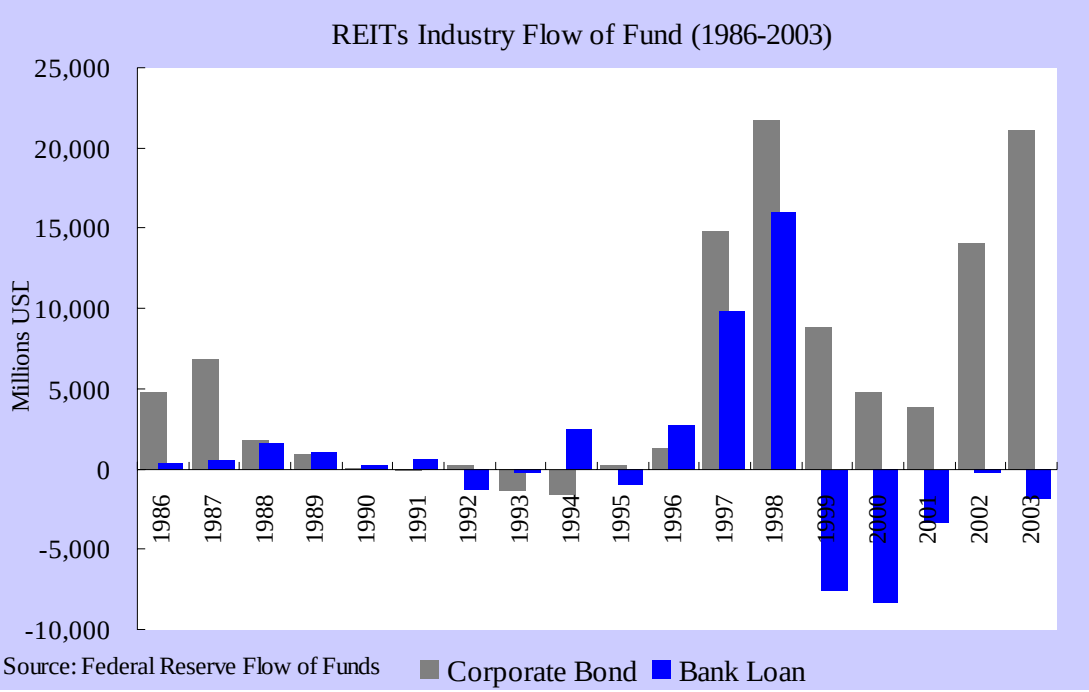
[16] While COMPUSTAT income-statement long-term debt issues (Item 86 in COMPUSTAT quarterly data file) includes both public and bank debt, it is an aggregate of all type of debts. No discriminations of features such as bank debt vs. public debt as well as fixed vs. floating debt are provided.

onto this form of debt.[17] Chart 5.7 gives an overview of the fund-flow of REITs bank loan vis-à-vis corporate bond during 1986-2003 period. One significant trend is that, starting from 1999, the net flow-of-fund from bank sector to REITs industry has be consistently negative.[18] In contrast, more and more capital is being poured into REITs industry through corporate bond market. Several factors are identified as driving forces for this shift from private to public debt. Firstly, the historical-low interest rates prompt REITs to lock-in the favorable financing cost by substituting short-term bank loans with public debts which are usually of longer maturity. Secondly, as investors gravitated towards REITs public debt vs. general corporates bond, the increased demand resulted in significant compressions in the yield-spreads (over benchmark Gov. bond) REITs have to offer. Thirdly, the development of CMBS market as well as other forms of securitization provides more options of public debt for REITs.

[17] NAREIT's debt data mainly focuses on public debt, while COMPUSTAT cash-flow statement classifies long-term bank loan into long-term debt issues (item 86). On the other hand, flow-of-fund data classifies debt according to the party providing it (i.e. bank or corporate bond market) rather than the maturity term of the debt. As a result, there is some overlapping between debt classified by flow-of-fund data and COMPUSTAT data.

[18] Flow-of-fund data for a certain year reflects net increase figure. The number might be negative if the retirement of the security is larger than the issuance during certain period.

Chart 5.7 REITs Corporate Bond and Bank Loan--Flow-of-Funds



The vast majority (95% of all the public debt from NAREIT data) of U.S. REITs public debts are in the form of fixed-rate. Only four spikes of float-rate debt issues, with a total number of 24 issues and total amount of US$ 4,398 millions, are observed in our study, as in Table 5.2 and Chart 5.11.[19] In particular, year 2001 witnessed the largest amount of float-rate debt issue during the two-decade period. Further evidence from REITs financial statements shows that, many REITs issuing such float-rate debt will enter into derivative contract to hedge the interest-rate risk of such financing, and eventually substitute them with long-term fixed-rate debt. This confirms our prior discussion about REITs' preference for fixed-rate debt to reduce the uncertainty of interest payment hikes. However, the average size of float-rate note issue is the largest among all forms of REITs public debt.

[19] 1994, 1997, 1998 and 2001 witness spikes of REITs float-rate debt issues as in Chart 6.2.5.

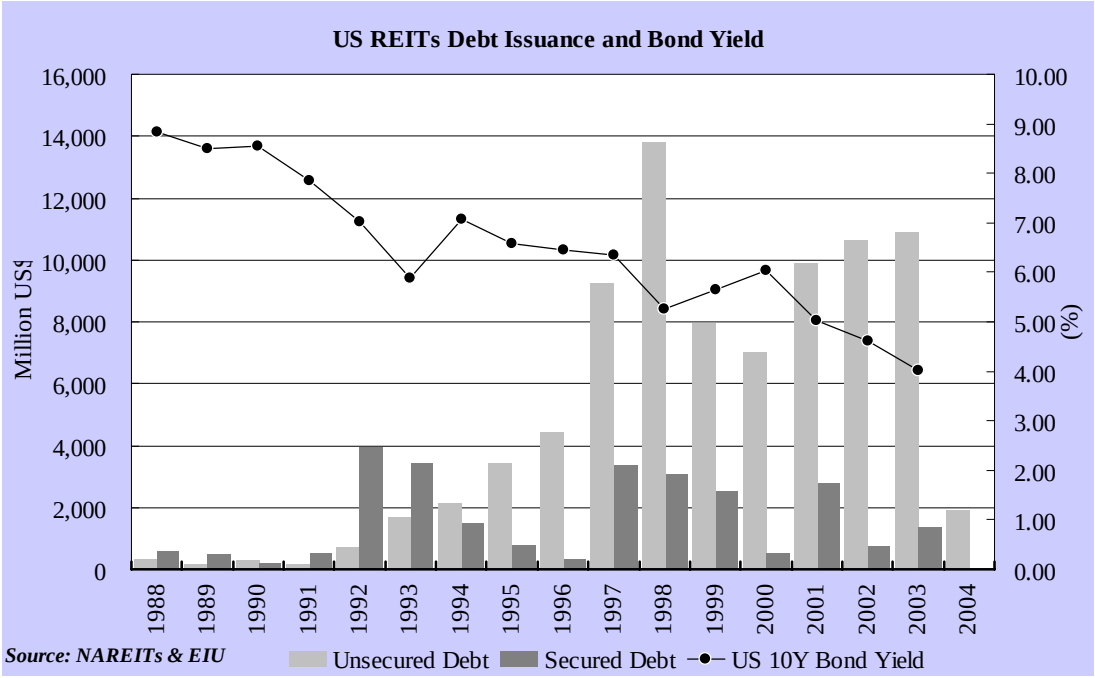
Data from NAREIT reveals that (Chart 5.8 through Chart 5.10), although secured-debt plays a significant role in the early stage of REITs development, throughout the whole period under study, the most common form of secured-debt---mortgage-backed securities (MBS) only accounts for 10% of total REITs public debt issues. Among the remaining 90% of unsecured-debt, unsecured-note is of particular importance, especially after 1995. On an aggregate basis, it accounts for about 60% of the total number of REITs pubic debt issuance and 72% of the total capital raised, with an average issue size of US$ 122 million.

Two other forms of public debt, namely convertible bond and MTN (median-term notes), also play important roles in REITs debt financing. Specifically, convertible bond accounts for about 5% of total REITs public debt offering, while the majority of convertible bond issues concentrated in the 1992-1997 period. It is also noticeable that the issues of convertible bond have a strong correlation with REITs share price level. For instance, during the period of 1998 to 2002 when REITs sector substantially underperformed the broader equity market (as in Chart 5.6), no single issue of convertible bond issuance was observed. In contrast, year 2003 saw a resurgence of convertible bond issues with the recovery in NAREIT equity-REITs price index.

MTN (median-term notes) gives REITs the flexibility in choosing the time and amount of public debt issue. One significant feature of REITs MTN issues is the small amount of the offering in contrast to the number of issues (the 187 REITs MTN issues of US$ 7.1 billions account for only 8% of total public debt capital, but 21% of total number of issues.). Also worth mentioning is the surge in MTN issuance in 1998, with 32 issues totaling US$ 4,170 millions. However, despite the flexibility it

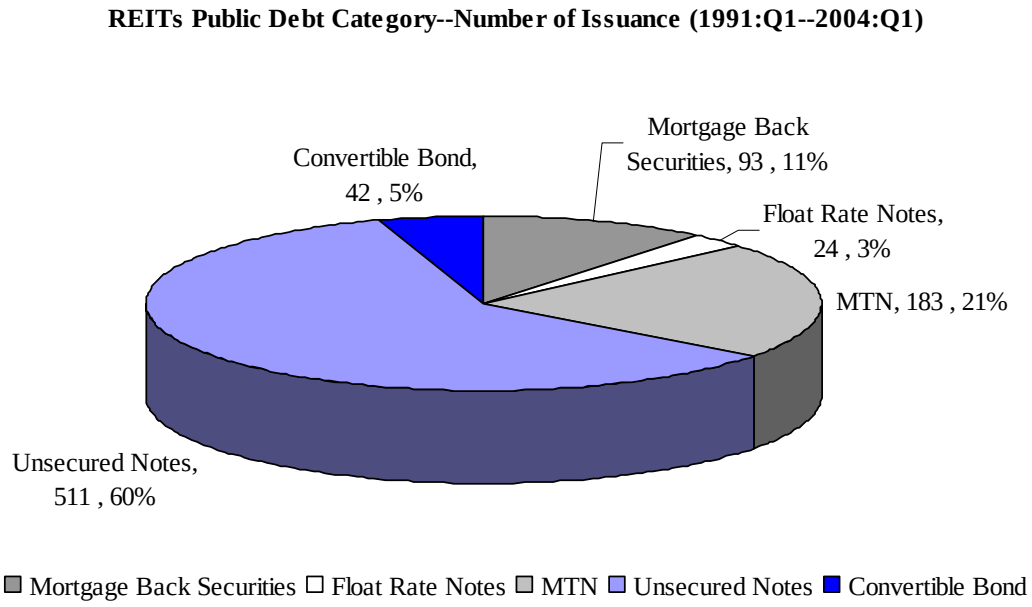
offers, Chart 5.11 suggests that MTN did not play a role as important as unsecured-note for REITs, as the number and amount of MTN issues subsided after 1998.

Chart 5.8 Decomposition of Debt Financing



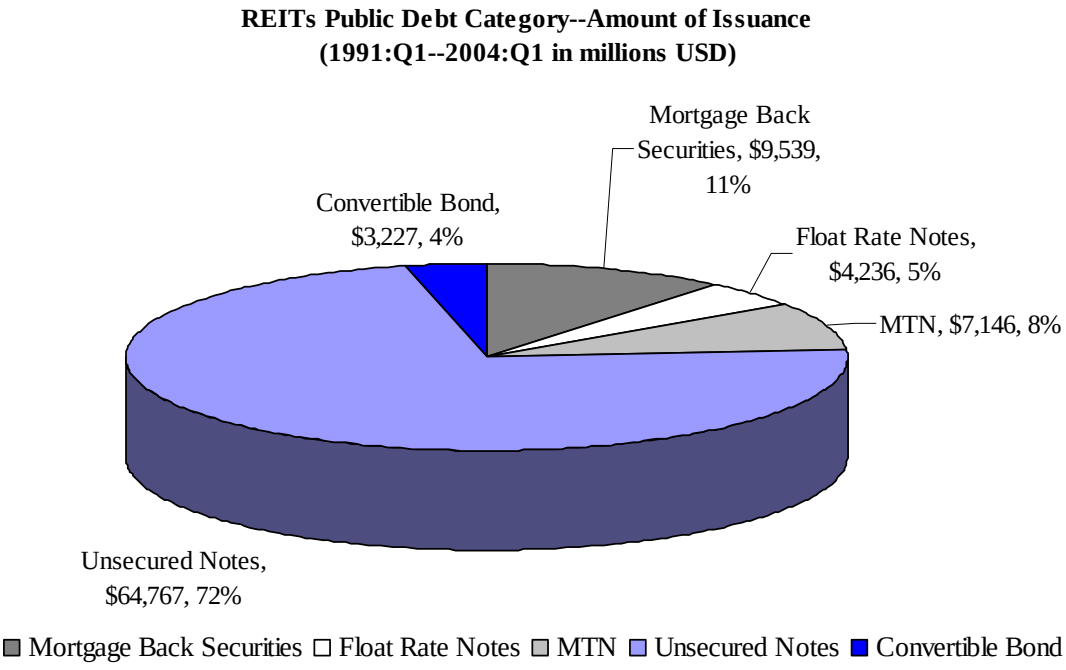
Source: NAREIT
Secured-debt mainly refers to mortgage-backed-securities (MBS), unsecured-debt includes unsecured-notes and MTN.

Chart 5.9 Decomposition of REIT Public Debt—Number of Issues



Source: NAREIT

Chart 5.10 Decomposition of REIT Public Debt—Amount of Issues



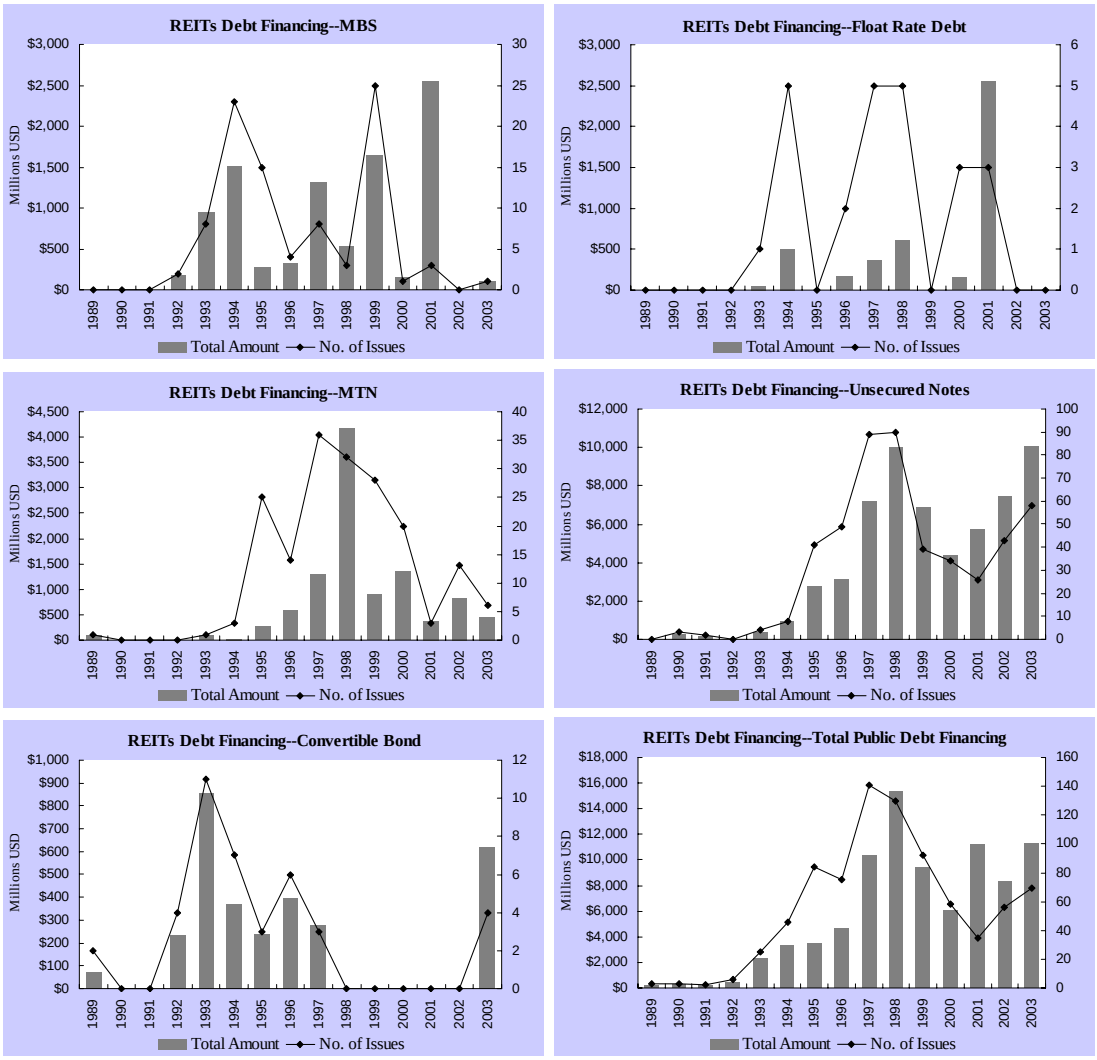
Source: NAREIT

Table 5.2 Decomposition of REITs Public Debt Offering

			MBS		Float Rate		MTN		Unsecured Notes		Convertible Bond	
	No. of Issuance	Total Amount	No. of Issuance	Amount	No. of Issuance	Amount	No. of Issuance	Amount	No. of Issuance	Amount	No. of Issuance	Amount
1989	3	$150	0	$0	0	$0	1	$75	0	$0	2	$75
1990	3	$275	0	$0	0	$0	0	$0	3	$275	0	$0
1991	2	$160	0	$0	0	$0	0	$0	2	$160	0	$0
1992	6	$414	2	$180	0	$0	0	$0	0	$0	4	$234
1993	25	$2,295	8	$943	1	$46	1	$75	4	$372	11	$859
1994	46	$3,321	23	$1,511	5	$500	3	$15	8	$925	7	$370
1995	84	$3,525	15	$276	0	$0	25	$261	41	$2,748	3	$240
1996	75	$4,654	4	$328	2	$167	14	$585	49	$3,179	6	$395
1997	141	$10,400	8	$1,315	5	$365	36	$1,280	89	$7,165	3	$275
1998	130	$15,346	3	$530	5	$610	32	$4,170	90	$10,036	0	$0
1999	92	$9,440	25	$1,654	0	$0	28	$896	39	$6,890	0	$0
2000	58	$6,045	1	$152	3	$160	20	$1,344	34	$4,389	0	$0
2001	35	$11,200	3	$2,550	3	$2,550	3	$375	26	$5,725	0	$0
2002	56	$8,305	0	$0	0	$0	13	$821	43	$7,484	0	$0
2003	69	$11,259	1	$101	0	$0	6	$462	58	$10,076	4	$620
Total	825	$86,789	93	$9,540	24	$4,398	182	$10,359	486	459,424	40	$3,068
Average		$105		$103		$183		$57		$122		$77

Source: NAREIT, Amount: Millions in US$

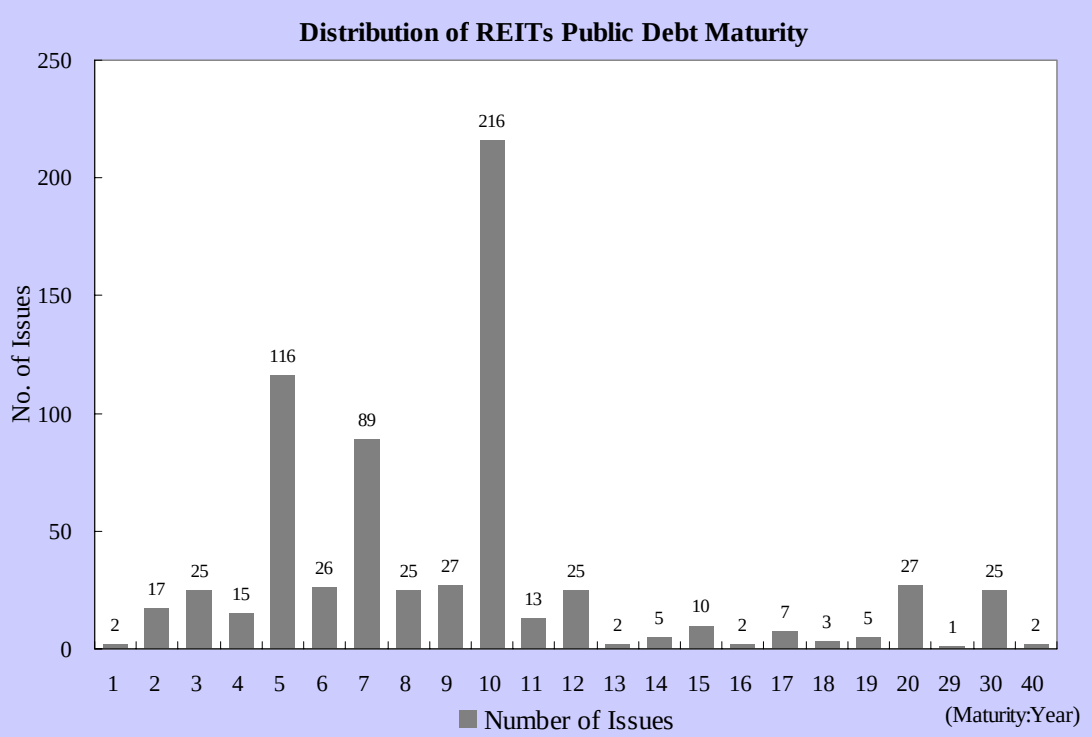
Chart 5.11 Decomposition of REIT Public Debt—Temporal Pattern



Source: NAREIT

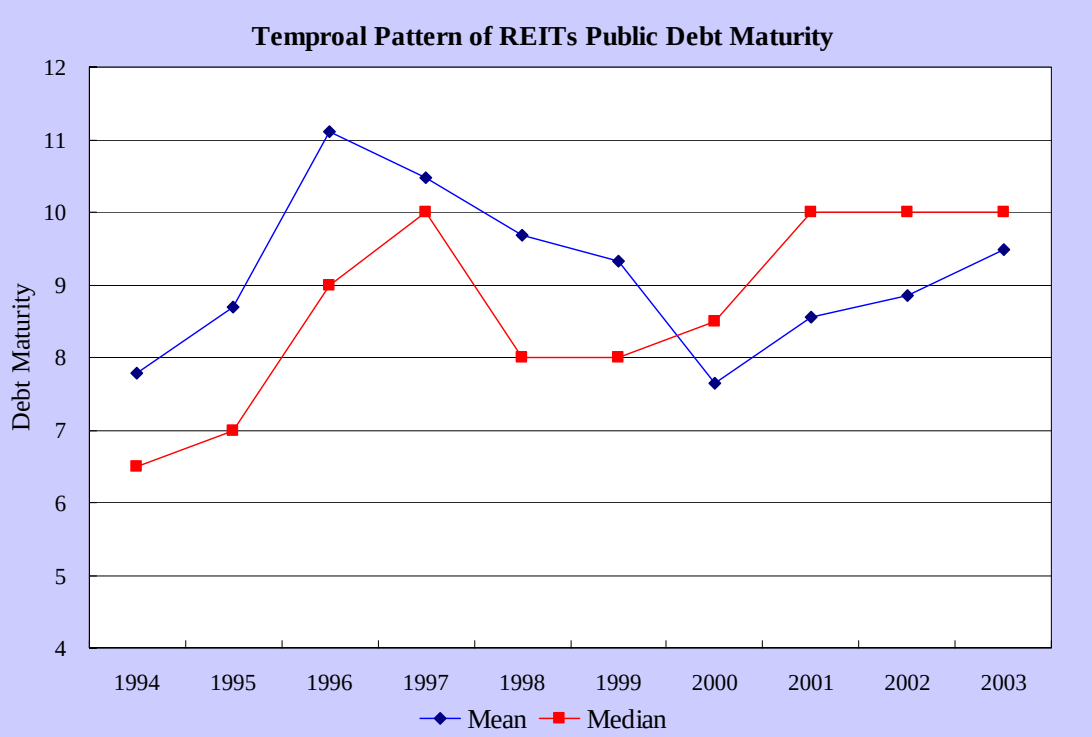
Finally, Chart 5.12 summarizes the maturity profile of REITs public debt at the time of issuance. On an aggregate basis, more than 80% of all REITs public debts have a maturity of less than 11 years, with the most common maturity being 10 years. This is significantly shorter compared to the pan-industry average maturity of 15 years found in Barry et. al (2003). Although there is no secular trend in REITs debt maturity choices, as Chart 5.13 shows, substantial time-series and cross-sectional variations among individual issues suggest potential maturity-timing activities as found in Baker, Greenwood and Wurgler (2003).

Chart 5.12 Maturity Profile of REITs Public Debt Offering--Distribution



Source: NAREIT

Chart 5.13 Maturity Profile of REITs Public Debt Offering—Temporal Pattern



Source: NAREIT

Mean and median in the chart are the mean and median maturity of all public debt securities issued by REITs in corresponding year.

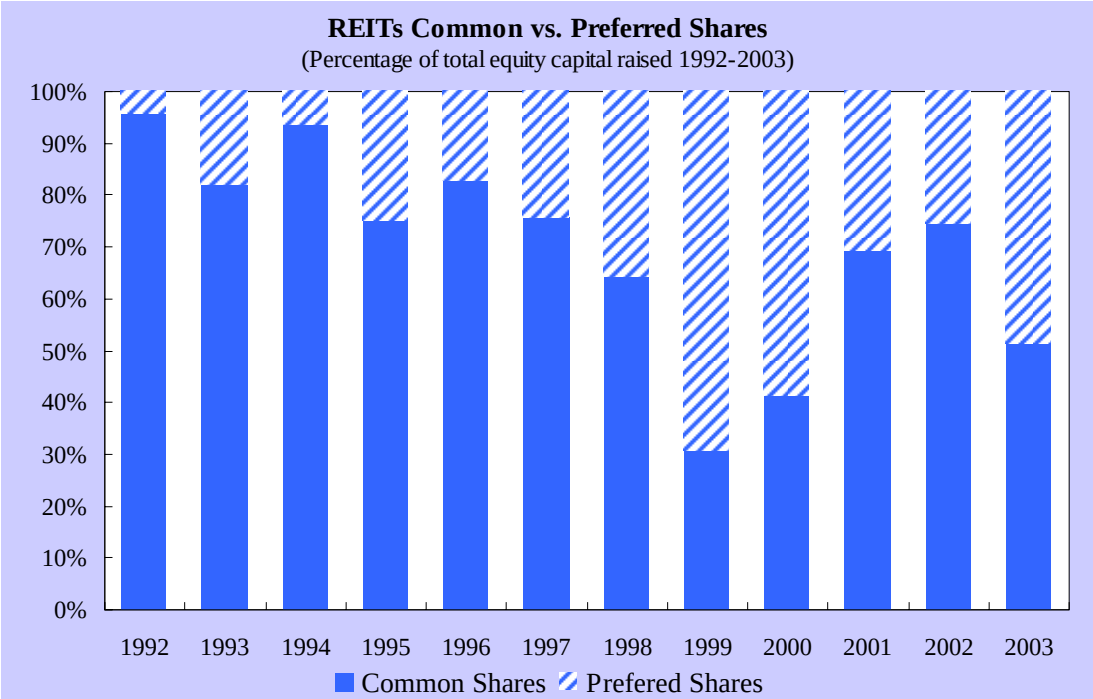
5.3 Preferred vs. Common Equity

Compared with debt securities, the classification of REITs public equity is relatively simple, of which preferred and common shares are the only two forms. Table 5.3 and Chart 5.14 examine the relative importance of these two equity capitals. On an aggregate basis, common share accounts for about 70% of the total equity capital issued during the period under review.

It's interesting to note that preferred share has been growing in its importance and prominence in the recent years, and becomes an important layer in REITs firms' capital structure. Although it is often thought that preferred shares are issued in periods when common stock has not been able to come to the market,[20] preferred shares do have certain attractiveness to investors, such as high dividend yield and absent of refinancing risk. In addition, the popularity of closed-end funds also drives the preferred share market on the demand side, as many of them are focusing on REITs preferred and common stocks for better yield in the low rate environment. However, there is no significant difference in the average size of these two forms of equity offering (73.3 millions per issue for common equity vs. 79.4 millions per issue for preferred equity).

[20] For instance, Perrein comments in NAREIT Analyst Outlook 2004: "What's interesting is that, typically, when I see companies rushing to the preferred stock market, it means that either they don't have access to the corporate bond market or they don't have good access to the equity market, especially for below investment grade REITs companies—it is often considered as the last leg left".

Chart 5.14 REITs Common and Preferred Shares Offering



Source: NAREIT

Table 5.3 REITs Common and Preferred Shares Offering

	Common Shares			Preferred Shares				
	No. of Issues	Amount (millions)	Percent	No. of Issues	Amount (millions)	Percent	Total No. of Issues	Total Amount (millions)
1992	23	1,010	95.6%	1	46	4.4%	24	1,056
1993	42	3,162	82.0%	8	694	18.0%	50	3,856
1994	48	3,690	93.5%	4	255	6.5%	52	3,945
1995	70	5,457	75.1%	22	1,811	24.9%	92	7,268
1996	113	9,268	82.7%	26	1,933	17.3%	139	11,201
1997	227	19,969	75.7%	65	6,408	24.3%	292	26,377
1998	216	12,443	64.2%	81	6,935	35.8%	297	19,378
1999	29	1,966	30.5%	71	4,478	69.5%	100	6,444
2000	11	1,172	41.4%	31	1,662	58.6%	42	2,834
2001	58	4,204	69.1%	21	1,878	30.9%	79	6,082
2002	85	5,785	74.4%	25	1,991	25.6%	110	7,776
2003	82	5,471	51.3%	64	5,192	48.7%	146	10,663
Total	1,004	73,597	68.9%	419	33,283	31.1%	1,423	106,880
Average Size		73.3			79.4			

Source: NAREIT *REITs Watch*. Various Issue. Available at http://www.nareit.com/researchandstatistics/index.cfm

5.4 Private vs. Public Financing

The focus of this study is on REITs public financing. However, COMPUSTAT cash-flow statement data also tracks private financing (such as private debt placement) in addition to public financing, although the magnitude of the latter is much larger. Thus, a brief discussion about private capital is necessary to complement our study.

To a large extent, private capital has been financing the real estate industry in U.S. before the burst of real estate bubble in the early 1990s. After the crisis, with the rapid growth of REITs market, public financing becomes the major form of capital injection into the real estate sector. However, although most REITs trade on an established securities market, there is no requirement in the U.S. that REITs be publicly traded companies.[21] Even for public listed REITs, they can also access private parties for both debt and equity financing, such as private placement of preferred shares and debt.

A through examination of REITs private financing is constrained by data availability. One commonly held view of real estate practitioners is that private and public market will co-exist and grow side-by-side. They argue that public sector will be less receptive to new ideas and venture capital type investments that are typically perceived as riskier, while private markets is the place for higher risk strategies, niche investing and new ideas.[22] However, it is widely agreed that better lending practices, more public market involvement with both debt and equity markets as well as better

[21] REITs that are not listed on an exchange or traded over-the-counter are called private REITs. There are three typical types of private REITs: (1) REITs targeted to institutional investors that take large financial positions; (2) REITs that are syndicated to investors as part of a package of services offered by a financial consultant and (3) "incubator" REITs that are funded by venture capitalists with the expectation that the REIT will develop a sufficient track record to launch a public offering in the future.

[22] Richard Saltzman, *Real Estate Portfolio*, NAREIT

information flows, will make real estate market less volatile and the cycles less dramatic.[23]

5.5 Chapter Summary

This chapter reviews the financing pattern of U.S. REITs during the period of 1986 to 2003. A number of stylized facts are identified: (1) Private capital has been financing the real estate industry in U.S. prior to the real estate crisis of 1988-1992. After the crisis, public capitals (public equity and debt) for REITs took the helm and began to play important roles in funding the industry. (2) REITs rely on equity financing for their capital prior to 1998, and turn increasingly to public debt financing starting from 1999. (3) REITs equity offering activities exhibit greater volatility than debt issues, and are closely linked to the performance of the broader equity market, reflecting the fact that primary equity market is more susceptible to market sentiments. (4)Federal Reserve flow-of-fund data reveals that bank loan began to flow out of the REITs industry from 1999. (5) The majority of REITs public debt are unsecured and fixed-rate, with a typical maturity of 5 to 10 years. Other forms of debt such as convertible bond and MTN, are still of less importance. (6) Preferred equity is also an important form of equity for REITs, in certain years, the amount of preferred equity even outpaced that of common shares.

The evidences from this chapter also reveal that, different from the prediction of pecking-order theory, REITs don't have a clear preference for debt over equity capital during the period studied. If anything, equity plays more important role than debt,

[23] Tom Robinson, *Real Estate Portfolio*, NAREIT

especially during the early period of REITs industry development. Rather, REITs' choices of the form of capital and the time to issue appear to be more closely linked to the conditions in both equity and debt capital market. In the next part of the thesis, we will turn to firm-level data to model how such choices are made according to capital market dynamics.

Part III. Empirical Research

Part I of this thesis gives the necessary background about the market-timing hypothesis and suggests that REITs provide a better testing ground for this theory. Part II further reviews existing evidence about REITs financing, and examines the patterns and trends at the aggregate level. The analysis reveals that, REITs choices of the form of capital and the time to issue appear to be closely linked to the conditions in both equity and debt capital market. This part carries out in-depth empirical analysis of REITs financing activities to see whether the market-timing hypothesis is validated. We begin with a detailed description of the research data and explanatory variables in Chapter six. Empirical tests pertaining to the various aspects of market-timing hypothesis are carried out in Chapter seven.

CHAPTER SIX

Research Data and Variables

6.1 Research Data

The empirical research necessitates the collection of three categories of data, namely the financing activities of REITs, variables reflecting financing cost and capital market conditions, as well as firm-characteristics controlling variables. REITs financing activities are classified into equity issuance/repurchase, net debt increase/reduction. These activities are identified from REITs cash-flow statement on a quarterly basis. The second category consists of explanatory variables such as equity market valuation and returns, as well as debt market yields and spreads, which reflect the relative costs of external debt and equity capital. Finally, a number of firm characteristics found significant in previous studies are extracted from REITs balance-sheet as controlling variables in the regressions.

Data for this research are obtained from various sources. U.S. REITs company fundamental data are retrieved from Standard & Poor's COMPUSTAT database. The identifications of COMPUSTAT REITs firms are further verified with information from NAREIT (The National Association of Real Estate Investment Trusts) database. Equity market price information is taken from CRSP (Center for Research in Security Prices of University of Chicago) database. [24] Debt capital market variables are obtained from Federal Reserve database.

All currently available equity-REITs (E-REITs) companies in COMPUSTAT are

[24] COMPUSTAT and CRSP data are obtained through a third party provider--WRDS, the Wharton Research Data Services website, available at http://wrds.wharton.upenn.edu/

included in our study[25]. Mortgage-REITs (M-REITs) and hybrid-REITs (H-REITs) are excluded from the sample due to their different business nature and asset structure.[26] In total, there are 144 equity REITs with a total market capitalization of $205 billion, which account for 94% of the total REITs capitalization in the U.S.

The range of data range is set from the first quarter of 1986 to the second quarter of 2003, while data availability of individual firm also depends on their respective listing date.

COMPUSTAT offers both annual and quarterly data of U.S. REITs industry, including balance-sheet, income-statement and cash-flow statement. Nearly all previous studies on capital structure decisions employ annual data in their empirical tests, partially due to the unavailability of higher frequency data for general industry firms. However, considering the fact that the both equity and debt market conditions change quickly and that firms often make issuance decisions more than once in a certain year, we believe that using quarterly data will better capture the dynamics in the capital market and offer more insights into firm financing activities.

[25] As shown in Table 4.1.3, REITs bankruptcies and consolidations during the 1990s resulted in the reduction of the number of REITs from its peak of 178 in 1995 to 144 at the end of 2003. Our sample only considers the industry "survivors". It is reasonable to assume that REITs that are in financial difficulties have different decision consideration. Their financing activities are more likely to be driven by survival considerations than market timing. Hence, excluding those REITs that went burst will not materially affect our results.

[26] The majority of Mortgage REITs' asset is not real estate properties but financial instruments such as Mortgage Backed Securities. Unlike Equity REITs which mainly derive their income from rents, Mortgage REITs generate income from the spread between the interest income on their mortgage-backed securities and the costs of borrowing to finance them

6.2 Identification of REITs Financing Activities

6.2.1 Gross vs. Net Issuance/Reduction

When studying financing decisions, both "net issuance/repurchase" and "gross issuance/repurchase" data may be considered. Table 6.1 reveals that previous literatures mainly focus on the net issuance/repurchase. The distinction between "net" and "gross" measure is less important for equity financing, as seasoned equity offering (SEO) and stock repurchase are often modeled separately. However, it is crucial to differentiate the "net amount" from "gross amount" in debt financing activities due to the common practice of debt-refinancing and the wide variety of debt.

Intuitively, in modeling debt financing, the gross amount of debt issuance or reduction by a firm in a certain period would be ideal. However, a pilot investigation of U.S. REITs financial statement reveals the common practice of debt-refinancing, as demonstrated in Table 6.2. The existence of debt-refinancing activities, especially the revolving of bank credit-lines, often makes the gross amount of debt financing appears so large compared with the amount of public debt (such as corporate bond) issuance or equity offering. For instance, Table 6.2 shows, in fiscal year 2000, the sample firm drew 5.17 billion dollars from line-of-credit while simultaneously repaid 5.99 billion, resulting in a net reduction in credit-line of 820 million. However, the gross amount of either the credit-line increase or reduction is colossal compared with 1.17 billion net increases in total debt or 120 millions in equity repurchase. We believe that the choices of both the time and the net increase/reduction amount of bank debt when carrying out refinancing maneuver reflect the strategic timing decisions of the firm, just as in the case of bond issues. With this in mind, and to be consistent with some previous studies as in Table 6.1, we also use "net" instead of "gross" debt financing

data in our modeling.

Table 6.1 Measure of Capital Issuance/Reduction Data in Previous Research

Literature	Equity Issuance/Repurchase Data	Debt Issuances/Reductions Data
Hovakimian, Opler and Titman (2001)	Equity issuance and repurchases are identified from the statement of change in cash flows as reported on COMPUSTAT	Debt issuances and reductions are identified by tracking the change in total debt (short-term plus long-term) reported in COMPUSTAT
Welch Ivo (2003)	Equity issuance is computed from the dynamics (difference) of market value of equity.	Debt issuance is computed from the dynamics (difference) of book value of debt.
Bayless, Chaplinsky (1996)	Equity offering data from Securities Data Corporation (SDC), cross verified with both CRSP and COMPUSTAT database	Not Modeled
Shyam-Sunder, Myers (1999)	N/A (only debt issuances/reductions are modeled)	Change in the stock value of long-term debt measured at the end of each period.
Frank and Goyal (2003c)	Net equity issued is the issue of stock minus the repurchase of stock.	Net debt issued is long-term debt issuance minus long-term debt redemption. (Constructed from Cash Flow Statement)
Leary and Roberts (2003)	An issuance or repurchases is defined as having occurred in a given quarter if the net change in equity or debt, normalized by the book value of assets at the end of the previous period, is greater than 5%.	

Net issuance data can be constructed from either balance-sheet or the cash-flow statement. A number of previous studies use balance-sheet data partially due to the limited availability of cash-flow statement for pan-industry firms. In our case, the availability of U.S. REITs cash-flow statements allows us to construct more accurate net issuance data since both the issuing and retiring amount are clearly known. [27]

[27] However, some recent studies, such as Huang and Ritter (2004), suggested that the choice of balance-sheet data or cash flow statement in constructing firm financing activities will not materially affect the results.

Table 6.2 Sample Financial Statement of Firm Refinancing Existing Debt

Financing Activities	**For the years ended December, 31 (Dollars in thousands)**		
	2002	**2001**	**2000**
Proceeds from Mortgage Debt	14,427	140,000	270,000
Principal Payment on Mortgage Debt	(156,052)	(458,731)	(460,111)
Proceeds from Unsecured Notes	239,127	1,386,598	2,180,785
Repayment of Unsecured Notes	(310,000)	(100,000)	--
Proceeds from Lines of Credit	1,336,350	3,206,050	5,168,975
Principal Payment of Lines of Credit	(1,374,950)	(3,152,036)	(5,986,516)
Repurchase of Preferred Shares	(199,850)	(106,250)	(890)
Issuance of Preferred Shares	205,645	--	--
Repurchase of Common Shares	(196,882)	--	(119,633)
Proceeds from exercise of share options	40,015	71,835	81,956
Redemption of Units	(106,690)	(1,245)	(3,780)
Net Increase/(Decrease) from Debt Financing	(251,098)	1,021,881	1,173,133
Net Increase/(Decrease) from Equity Financing	(151,072)	(34,415)	(38,567)

Source: Annual Report, Equity Office Properties Trust, 2002

6.2.2 Long-Term Debt vs. Total Debt

A review of previous literatures about the choices of measurement of debt issuance activities reveals that, cases using total-debt and long-term debt are present, as shown in Table 6.1. In particular, Shyam-Sunder and Myers (1999), Frank and Goyal (2003c) used long-term debt from COMPUSTAT database in their empirical study. In addition, data on quarterly "changes in current-debt" (Item 75) is not available for most REITs in COMPUSTAT cash-flow statement. As a result, we also focus on long-term debt rather than total debt in subsequent modeling. However, definition of long-term debt issuance/reduction in COMPUSTAT already covers a wide range of debt securities.[28]

[28] Refer to endnote 2 "Definition of Long-Term Debt Issuance and Reduction in COMPUSTAT"

6.2.3 IPO vs. SEO Activities

The equity offerings modeled in this study are SEOs (Seasoned Equity Offerings) only. Some researchers and industry practitioners argue that, while timing is an extremely important consideration in IPO decisions, IPO timing may be fundamentally different from SEOs[29]. Hence, they are normally modeled separately from SEOs in empirical studies.

6.2.4 Filtering Criteria for Financing Activities

Consistent with some previous studies, while at the same time considering the fact that REITs firms are, on average, smaller than firms in other industries, we apply certain filtering criteria to verify the financing activities identified from the cash flow statement.[30] For equity issuance/repurchase events, we require the issue/repurchase size to be larger than US$ 1 million in absolute term, and the ratio of this amount to book-value of total-assets and total-equity exceed 1% and 5% respectively. For net debt increase/reduction, the size should also be larger than US$ 1 million, and the amount of net increase/reduction divided by total-assets should be larger than 2%. After the filtering process, we have 767 equity issuances and 101 equity repurchases events, as well as 1,570 net debt issuance and 622 net debt reduction events

[29] For instance, Jon Fosheim, principal, Green Street Advisors, suggests that moving from the private to public market is a matter of a REIT determining what's most beneficial for it going forward, as opposed to trying to time the broader market. Similarly, Lou Taylor, senior real estate analyst of Deutsche Bank Securities, contends that any REITs IPOs are likely to have been in the works for a while and not looking to capitalize on any short-term market factors.

[30] Hovakimian, Opler and Titman (2001), Baker and Wurgler (2002) and Huang and Ritter (2004) all apply the threshold of five percent of total assets criteria to identify financing activities in their studies involving industrial firms. For instance, Hovakimian, Opler and Titman (2001) defined firms as issuing (repurchasing) a security when the net amount issued (repurchased) divided by the book value of assets exceeded 5%. The selection of filtering criteria for REITs also takes into consideration the percentile distribution of the actual financing amount of REITs.

respectively.[31] In addition, we also identify one distinctive financing activities that is interesting, the dual offering[32], in which a REIT issues debt and equity securities in the same quarter. The number of these this special case is 170, which are quite high relative to the total number of financing activities identified.

6.3 Dependent and Explanatory Variables

As previously discussed, market-timing means choosing the time as well as the form and amount of securities to issue according to their relative cost, in an effort to take advantage of temporary misvaluations of these securities in the capital market. Accordingly, our empirical test of the broader market-timing hypothesis is segregated into examinations of REITs' decisions pertaining to issue time, debt-equity choice, debt-maturity choice, as well as size of financing activities.

Discrete choice models can be used to model the occurrence of an event, or choices among a number of alternatives. Empirical tests of capital structure theory in previous literature make extensive use of discrete choice model. Specifically, Hovakimian, Opler and Titman (2001) and Brown and Riddiough (2003) employed probit model to study firm's debt-equity choices, while multinomial logistic model is used in Huang and Ritter (2004)'s test of the windows-of-opportunities theory and Guedes and Opler (1996)'s study on corporate debt maturity decisions. However, Brown and Riddiough (2003) and Huang and Ritter (2004) suggested that there is an

[31] The numbers of financing activities identified from COMPUSTAT quarterly cash-flow statement are different from the transaction-by-transition records from NAREIT (especially in the case of equity offering) due to the combination of following reasons: (1) The exclusion of financing activities of those REITs that went bankruptcy or were acquired. (2) Cases of multi-issuance in the same quarter, such as self-registration equity issuance. (3) The application of the above mentioned filtering criteria.

[32] Dual debt and equity offering is also studied in Hovakimian A., Hovakimian G., and Tehranian H. (2004).

endogenous choice between debt and equity. In other words, REITs may simultaneously decide the time and the type of financing action. Correspondingly, multinomial logistic model is selected to account for this simultaneity in financing decisions.

Our empirical estimation procedure differs from previous studies involving REITs securities offering activities and capital markets. In previous studies, researchers are mainly interested in how REITs' securities issues affect their share performance. As a result, event study methodology is often used to model the announcement effect and abnormal returns. In other words, they are examining how the effect of financing actions is transmitted into the capital market, reflecting in the changes in share prices. However, in our study, we are more interested in how the conditions in the capital market, such as equity market valuations and returns or debt market yields and spreads, trigger REITs financing actions and affect their choices between different forms of capital (such as debt-equity choice, as well as long-term vs. short-term debt choice).

This section first introduces the dependent variables in subsequent empirical tests. This is followed by in-depth discussions of each explanatory variable used in the study, including the rationale for the variable, evidence linked to the variable in previous literatures, as well as related statistics. A summary of all the explanatory variables is presented in Table 6.3.

Table 6.3 Explanatory Variables in Market-Timing Test

Abbr. of Variables	Explanatory Variable Name	Proxy	Notes
Group 1: Individual REIT Firm-Specific Variables			
MB_R	Market-to-Book Ratio	Closing price of a REIT's share at the end of each quarter divided by book value per share	Ratios greater than 20 are excluded*
DY_Firm	Dividend Yield	Annualized dividend rate divided by a REIT's quarter-end share price	Values greater than 100% are excluded*
PE_R	Price-Earning Ratio	Closing price of a REIT's share at the end of each quarter divided by the 12-month moving-average of annulized earning per share	Ratios greater than 100 are excluded*
PR_4Q	Price Return	Price appreciation of a REIT's share in the 4 quarters prior to the financing activity [33]	Return greater than 300% for 4 quarters are excluded*
Group 2: Market Timing Variables (Equity Capital Market)			
SP_R4Q	Price Return of S&P 500 Index	Price appreciation of the aggregate stock market in the 4 quarters prior to the financing activity	
NAREIT_R4Q	NAREIT e-REITs Price Return	Price appreciation of the aggregate equity REITs sector in previous 4 quarters	
FF_SMB	Fama-French Size Factor Return	The difference between small and big size equity-portfolio return, defined as in Fama and French (1993)	Data obtained directly from WRDS Database**
FF_HML	Fama-French Growth Factor Return	The difference between high and low book-to-market equity-portfolio return, defined as in Fama and French (1993)	Data obtained directly from WRDS Database**
Group 3: Market Timing Variables (Debt Capital Market)			
GB_10Y	10-Year Gov Bond Yield	The constant maturity 10-Year Gov. bond from Federal Reserve Data Base	In percent (%)
REAL_GB_3M	Real Short Term Interest Rate	3-month Treasury bill rate minus corresponding quarter's inflation rate	In percent (%)
GB_TS	Term Spread of Gov. Bond Yield	The difference between the yields of 10-Year and 1-Year Gov. bond	In percent (%)
CBS	Credit Spread of Bond Yield	The difference between the yields of high-quality (Aaa rated) and high-yield (Baa rated) U.S corporate bond	In basis point
INFLA	Inflation Rate	The quarterly percentage change in the Consumer Price Index (CPI)	In percent (%)
Group 4: Firm-Characteristics Controlling Variables			
Rating	S&P Long-Term Debt Rating	Dummy variable for the long-term domestic issuer debt rating by S&P, 1 for investment grade, 0 for non-investment grade or non-rated	COMPUSTAT item between 2 (rated AAA) and 12 (rated BBB-) denotes investment grade
Profit	Firm Profitability	Net-income scaled by total-asset of a REIT at the end of each quarter	
Size	Firm Size	The natural logarithm of a REIT's total-asset at the beginning of the quarter	
Leverage	Leverage Ratio	The ratio of a REIT's total-debt over total-asset at the beginning of the quarter	

*The filtering criteria for individual REIT firm-specific variables are applied to remove the outliers in the data, threshold values are set according to the percentile distribution of the underlying sample data.
**WRDS is the Wharton Research Data Services website, available at http://wrds.wharton.upenn.edu/

[33] The time frame of 4 quarters is consistent with a number of previous studies, such as Leary and Roberts (2003).

6.3.1 Dependent Variables

As discussed, we choose the multinomial logistic model to simultaneously model the probability of the occurrence and the choices between different forms of financing activities. Specifically, we code each of the five mutually-exclusive financing activities, namely equity issuance/repurchase, net debt increase/reduction and dual offering with an integer ranging from 1 to 5. Firm-quarter observations during which no financing activities are observed are taken as baseline scenario.

Consistent with Guedes and Opler (1996), logarithm of REITs public debt maturity is taken as the dependent variable in the OLS regression modeling REITs debt-maturity choices.

In examining the determinants of the size of financing activities, we defined the dependent variable as the relative size of the issuance/repurchase (the financing transaction amount scaled by the total-assets of the REIT). OLS regressions are used employing pooled firm-quarter observations of four types of financing activities, namely equity issuance/repurchases, net debt increase/reduction. To reduce the potential heteroscedasticity problem, relative issuance/reduction size (dollar amount scaled by total-assets) is used, as in Hovakimian, Opler and Titman (2001).

In the above three models, the dependent variables are linked to explanatory variables reflecting the relative cost of equity or debt capitals, which are discussed in the next two sub-sections.

6.3.2 Equity Capital Market (ECM) Timing Variables

Equity capital market variables include two equity valuation metrics, M/B and P/E ratio, share price returns as well as dividend yield. In addition, two Fama-French factors are encompassed to capture investors' preference for different types of equity as well as asset allocation patterns (such as the rotation strategy between different sectors of the equity market).

6.3.2.1 Market-to-Book Ratio (M/B ratio)

Market-to-book ratio (M/B ratio), or price-to-book ratio (P/B ratio), is an important variable in capital structure literatures, and has been employed in the empirical tests of different theories, either as a proxy for growth opportunities in the test of trade-off theory or as a measure of equity valuation in the market-timing hypothesis.

When used to capture the growth opportunity of a firm, M/B ratio is considered to reflect the ability of a company to earn a return on capital that exceeds invested funds (Reilly and Brown, 2001, p764). Specifically, market value is considered to include the value of growth opportunities, while book value is an estimate of the value of the firm's assets in place. Smith and Watts (1992) emphasized the importance of the "investment opportunity set", and predicted that the more valuable a firm's future investment opportunities, the less it borrows today. Empirical evidence regarding the cross-sectional variation of firms' debt level, notably Rajan and Zingales (1995), confirmed the strong inverse relationship between market-to-book ratio and firm debt-ratio. Myers (2003) suggested two plausible reasons for this phenomenon of why "growth firms borrow less". First, growth opportunities are intangible assets, which are likely to be damaged in distress or bankruptcy. Second, issuing risky debt

today undermines the firm's incentives to invest in the future.

Alternatively in market-timing hypothesis, M/B ratio is used to capture the effect of stock price valuation on firm's financing decisions. For instance, Hovakimian, Opler, and Titman (2001) found that, current stock price relative to book value significantly affects firm's issuance choice. They showed that firms with low market-to-book ratios tend to issue debt rather than equity. The authors suggested that it is more likely that the negative coefficient of this variable reflect managers' aversion to issuing low-priced stock for certain accounting and incentive reasons, such as earning and book value dilution. Similarly, Pagano, Panetta, and Zingales (1998) found that the most important determinant of Italian firms' going-public decision is the industry's market-to-book ratio. They argued that the ratio is a proxy for mispricing rather than growth opportunities.

Market-to-book ratio also forms the basis of Baker and Wurgler (2002)'s test of market timing hypothesis. In their study, the authors found that market-to-book affects firm capital structure through net equity issues in the short term. Further, they showed that market-to-book has a persistent effect on firm's capital structure in that the external-financing-weighted market-to-book ratio helps to explain the cross section of firm leverage.[34]

Views of industry practitioners echo the above academic findings. MV/BV (Price/NAV) is a very important valuation metric that financial analysts consider when evaluating REITs shares, although other stock valuation model such as DCF (Discounted Cash Flow) and DDM (Discounted Dividend Model) are also used.

[34] Refer to Section 3.3 for a detailed discussion of Baker and Wurgler (2002).

REITs managers as well as investment bankers often consider MV/BV (Price/NAV) ratio to be an important factor in making their equity issuance decisions. For instance, Christopher Niehaus[35], commented on the U.S. REITs market valuation of mid-2002: "The real estate market is currently trading at a slight premium to NAV, as a result, we are seeing more equity issuance in the public capital markets and less of an interest in accessing private equity, raising capital from the public market is generally simpler, faster and cleaner. If your stock is trading at or above NAV and you have a good, identified use of proceeds, it is a very efficient way of raising capital".

6.3.2.2 Equity Price Returns

Share price returns at both aggregate-market and individual-firm level may capture the effect of stock price movements on corporate financing decisions. Empirically, Masulis and Kowar (1986) and Asquith and Mullins (1986) found that firms tend to issue equity following an increase in stock prices.

Hovakimian, Opler and Titman (2001) also included stock return in examining firm debt-equity choice. They suggested that a firm's past stock return may be related to its target debt-ratio. Specifically, holding cash flows constant, a high stock return may reflect an increase in the perceived value of the growth opportunities and therefore, may indicate a decline in the firm's target debt-ratio. Examining the two-year stock return before the issuing activities, they found that the return was relatively higher for all types of issuers (debt or equity issuers) except for the preferred stock and short -term debt issuers. In the case of preferred stock issue, the realized returns were lower, on average, than the non-issuers. In addition, more than half of the preferred stock issuers realized negative returns over the two years prior to the issue. In

[35] Managing Director, Head of North American Real Estate Investment Banking Group, Morgan Stanley.

contrast, common stock and convertible debt issuers realized exceptionally good stock returns during the pre-issue two years time. They concluded that these evidences confirm previous findings that firms are most likely to issue equity follow a stock price run up. The researchers also found that stock returns play a significant role in explaining the sizes of the issuance. Specifically, high past stock returns are associated with larger issues of common equity as well as long-term or convertible debt. Interestingly, their results showed that the effect of stock return on the size of the debt issue is opposite to its effects on the probability of such an issue.

Ghosh, Nag and Sirmans (1997b) also found that the performance of a REIT's common stock is a strong indicator of its financing choice. Their results showed that better share price performance was associated with active fund raising activities of REITs companies during the period of 1991 to 1996. Similarly, Ooi (1998), studying UK property companies financing activities, found that debt capital is likely to be substituted by equity capital when the market for property stocks are performing well.

In our study, we use the price return of S&P 500 Index to proxy for general stock market performance, and that of NAREIT equity-REITs Index for REITs sector share performance.[36] The latter is included because it captures the effect of investors' asset allocation pattern within different sectors in the stock market under different equity market conditions. For instance, it is well known that after the TMT (Telecommunication, Media, and Technology) bubble in 2000, there was a general "flight to quality" in major stock markets, investors burnt by tech-stocks were chasing stock with clear business models, stable cash-flow and dividends and relatively low risks.

[36] The correlation coefficient between quarterly S&P 500 Return and NAREIT Index Return during the period 1986Q1-2003Q2 is only 0.247..

Thus there was an influx of fund towards the REITs sector. On the other hand, in the second half of 2003 when institutional investors believed the economic recovery was underway and the broader stock market was expected to generate more growth in earnings than real estate stocks, there was a significant rotation out of REITs equity and into the broader corporate equity market. This rotation strategy greatly affects the flow-of-fund into the REITs sector, and ultimately is reflected in the share price of REITs stocks. Hence, it is reasonable to suppose that REITs managers might also take advantage of these windows-of-opportunities in investors' asset allocation pattern to raise more capitals.

6.3.2.3 Price/Earning Ratio (P/E)

P/E Ratio, also referred to as the earnings multiplier, is probably the most widely used and the most important relative valuation yardsticks in the equity market. It is also the focus of a number of studies discussing the overvaluation of stock market.[37]

Table 6.4 and Chart 6.1--6.2 give an overview of the historical REITs P/E ratio vis-à-vis the broader equity market. During the period from 1988Q1 to 2004Q2, REITs stocks are traded at a P/E ratio ranging from 11.7 to 35.2 (proxied by the DataStream U.S. REITs Index), while the P/E for broader equity market varies between 11.6 and 30.4. Surprisingly, on average, REITs are shown to have a higher P/E in that the relative average-P/E ratio of REITs sector to broader equity market is 1.11 (20.6 for REITs and 19.4 for broader market during 1988Q1 to 2004Q2). However, the dynamics are different in sub-periods: REITs P/E is consistently higher than that of broader market during 1993 to 1998Q2, whereas the trend reverses itself during the 1998Q2 to 2003Q2 period.

[37] For instance, in *Irrational Exuberance* by Robert Shiller

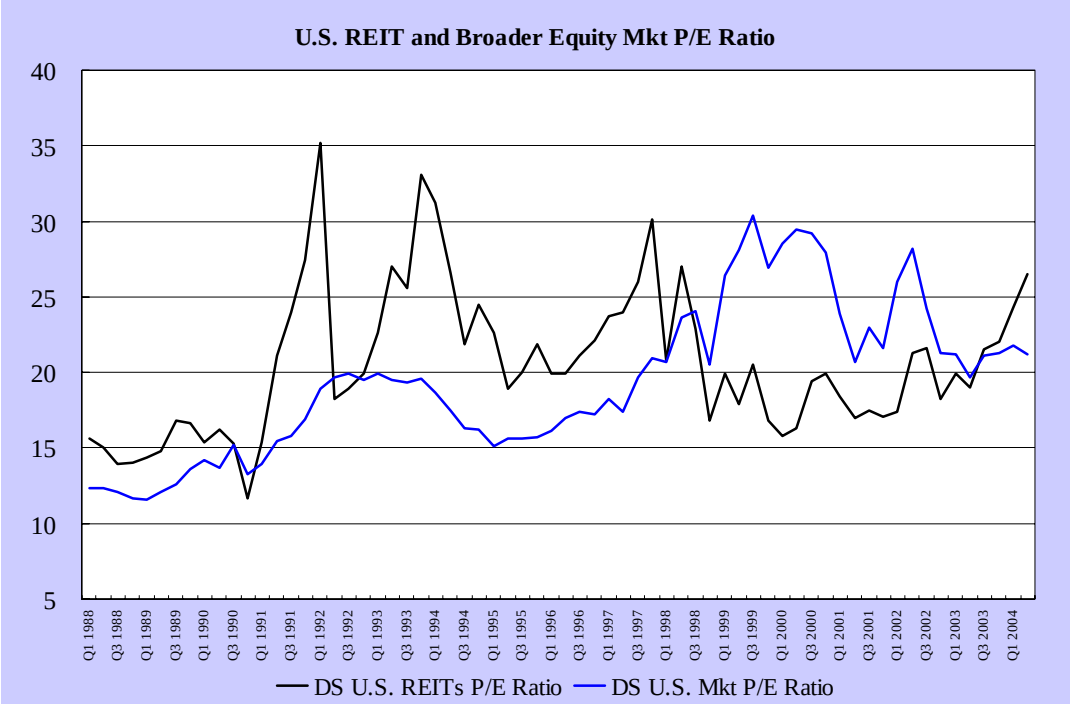
Table 6.4 Summary Statistics of REITs P/E Ratio (1988Q1-2004Q2)

	REITs (DS USREITs Index)	Broader Equity Market (DS U.S. All Mkt Index)	Ratio of REITs P/E to Broader Equity Mkt P/E
Mean	20.60	19.40	1.11
Median	19.90	19.50	1.15
Max	35.20	30.40	1.86
Min	11.70	11.60	0.55
Std Ev	4.79	4.98	0.30

Source: DataStream

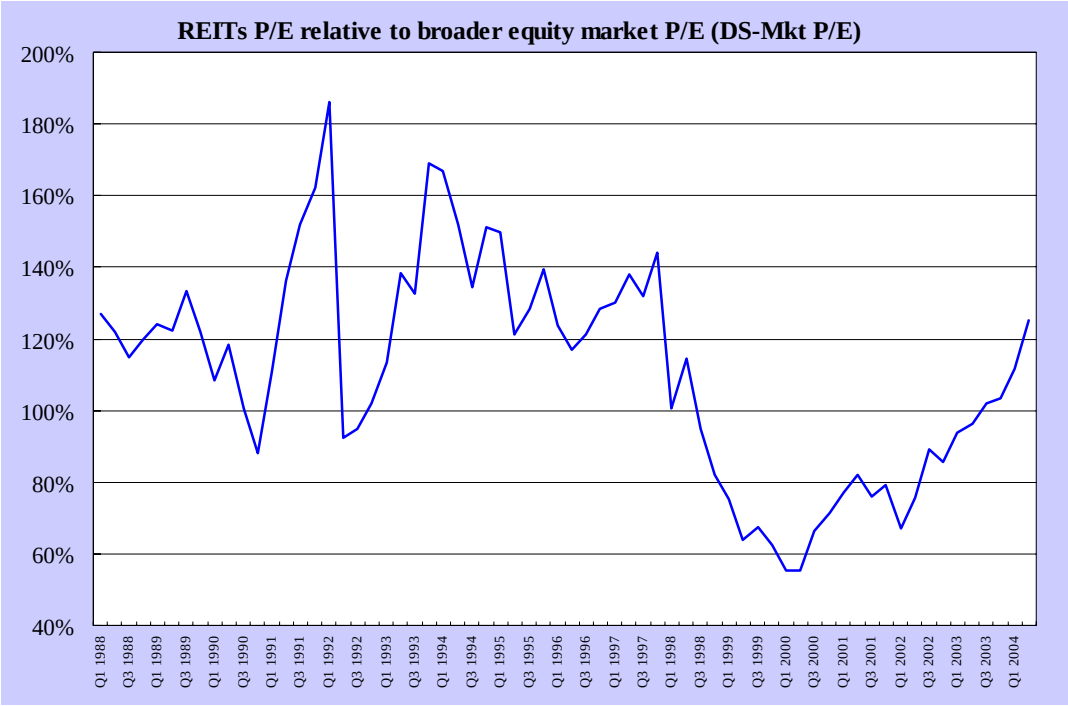
Two measures of P/E are used in the empirical studies: the absolute P/E of individual REIT and the relative P/E of REIT firm vis-à-vis the REITs sector (the ratio of individual REIT P/E to Datastream REITs index P/E).

Chart 6.1 U.S. REITs P/E Ratio vs. Broader Equity Market P/E



Source: DataStream

Chart 6.2 U.S. REITs Relative P/E Ratio to Broader Equity Market



Source: DataStream

6.3.2.4 Dividend Yield

Dividend yield is another important component of the total-return of investing in REITs shares besides the price-return. Moreover, dividend yield is often considered to be closely related to investors' required rate-of- return of a firm's equity, which is in turn the cost of equity from an issuer's perspective. Rozeff contended that, given some economic assumptions, the dividend yield is equal to the risk premium on equity.[38] He even suggested that it is an excellent time to invest in equities when the dividend yield exceeds 6 percent, while conversely when the yield is below 3 percent. Although this proposition is not fully supported by empirical evidence, equity dividend yield is no doubt an important benchmark investors consider when they make their investment decisions.

[38] Rozeff, *Stock Market Analysis*, 6th ed, chapter 18, page 682. He also suggested another two ways to estimate equity risk premium: (1) the arithmetic mean of the difference in the annual rate of return from stocks minus the return on Treasury bills. (2) the credit spread of Baa and Aaa bond yield.

For REITs share in particular, the stable and high dividend yield is often thought as one of the main attractiveness it offers vis-à-vis other asset classes, especially during period of low interest rate environment, which characterizes much of the period in this study.

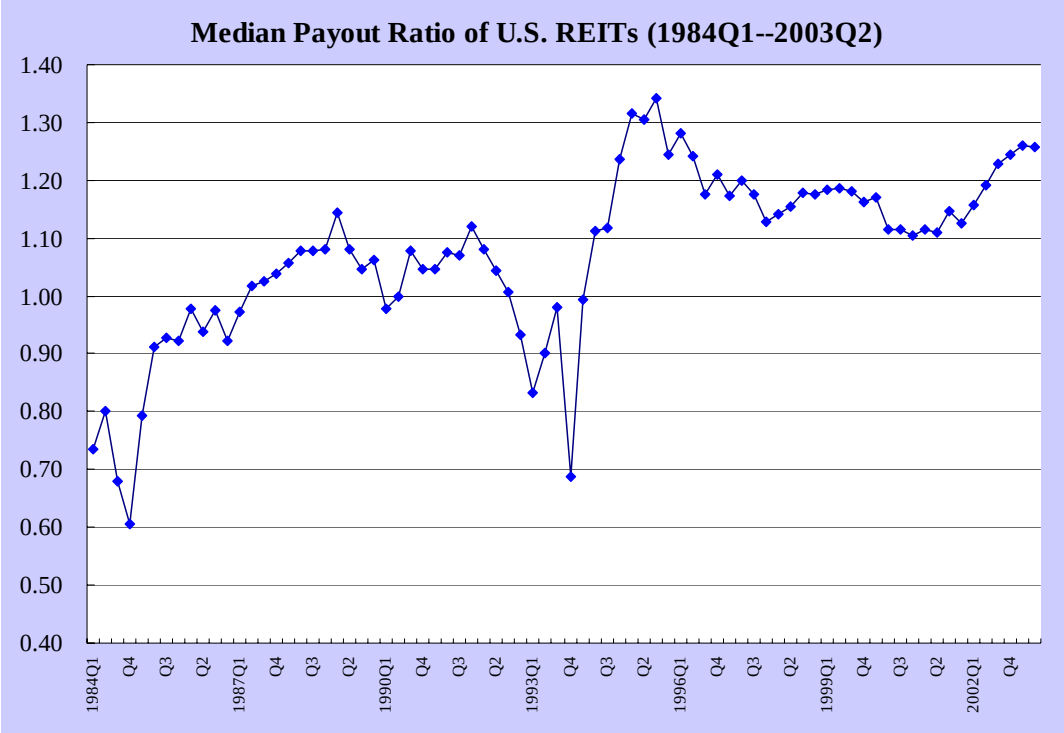
Due to the high payout requirement, REITs dividend yield is believed to be closely linked to P/E ratio through the payout-ratio in that:

$$\frac{D}{P} = \frac{D}{E} \times \frac{1}{P/E}$$

However, our examination of the quarterly individual REIT payout statistics reveals that, while REITs annual payout meets the 90% payout requirement[39] (Chart 6.3), their quarterly dividend is more stable (or "sticky") whereas quarterly earnings demonstrate considerable volatility. In other words, the quarterly payout-ratio (D/E) is far from being a constant. We suggest that P/E is taken more from an equity-valuation perspective while REITs dividend yield is considered by investor in comparison with other asset-classes to determining the desirability of REITs stocks. Nevertheless, we still consider these two variables separately in subsequent regression analysis.

[39] In reality, when using GAAP defined net-income as measurement of REITs earning, the payout ratio is often greater than 100%, which echoes Su, Erickson and Wang (2003)'s observation that "REITs payout more than is required". This is because calculation of net-income involves significant non-cash items such as depreciations of property assets.

Chart 6.3 Median Payout Ratio of U.S. REITs (1984Q1-2003Q2)



Source: COMPUSTAT and author compilation.
The chart shows the quarterly cross-sectional median of REITs payout ratio. For instance, the median payout ratio 0.978 for 1990Q1 is the median of all observed individual REIT payout ratios in that quarter. Median instead of mean value is used to reduce the influence of extreme values.

6.3.2.5 Investors' Risk Appetite and Preference

Huang and Ritter (2004) argued that firms' financing decisions are also affected by changes in investors' preference for different types (or "style") of equity, such as small vs. large cap stocks, as well as value vs. growth stocks. Since REITs stocks are normally considered to be value stock, although not necessarily small caps, it would be interesting to see how such preference affects REITs' decisions to issue equity and debt securities. In this study, we use returns for Fama-French size and growth factor to capture the dynamics of investors' preference for small vs. large, as well as value vs. growth equity class.

The Fama-French factor-returns are variables used in Fama and French (1993) to explain excess-returns on stock portfolio:

$$R(t) - R_f(t) = a + b \times MKTRF(t) + s \times SMB(t) + h \times HML(t) + e(t)$$

In which *R(t)* is the return of a stock portfolio. $R_f(t)$ is risk-free rate proxied by one-month treasury-bill rate. *MKTRF(t)* is excess market-return over risk-free rate, where the market-return is proxied by value-weighted return of all stocks. *SMB(t)*, small-minus-big, is the difference in average return on portfolios of small-cap stocks and portfolios of large-cap stocks. While *HML(t)*, high-minus-low, is the difference in average return on portfolios of high book-to-market equity and portfolios of low book-to-market equity.[40]

Fama and French (1993) showed that these three factors satisfactorily explain the cross-section of stock returns. A number of subsequent studies in asset pricing confirmed that *SMB* and *HML* capture true size and value risk factors in explaining stock returns. Both factor-returns demonstrate considerable variations throughout the study period, especially during the late 1990s, as shown in Chart 6.3. For instance, during the TMT bubble period of 1999Q3 to 2000Q2, the return for *HML* factor was significantly negative, indicating investors' strong preference for growth stocks instead of value ones during that time. However, the pattern quickly reversed itself in 2000Q2 to 2001Q2 when the bubble burst.

[40] Specifically, the Fama and French Portfolios are constructed from the intersections of two portfolios formed on size, as measured by market equity (ME), and three portfolios using the ratio of book-to-market(BE/ME). Returns from these portfolios are used to construct the two factors.

HML(high minus low) is the average return on the two value portfolios (that is, with high BE/ME ratios) minus the average return on the two growth portfolios (low BE/ME ratios).

HML=1/2 (Small Value + Big Value)-1/2 (Small Growth + Big Growth)

SMB (small minus big) is the average return on the three small portfolios minus average return on the three big portfolios.

SMB=1/3 (Small Value + Small Neutral + Small Growth)-1/3 (Big Value + Big Neutral + Big Growth)

The historical data of SMB(t) and HML(t) constructed using all NYSE, AMEX and NASDAQ stocks are available at WRDS, the Wharton Research Data Service.

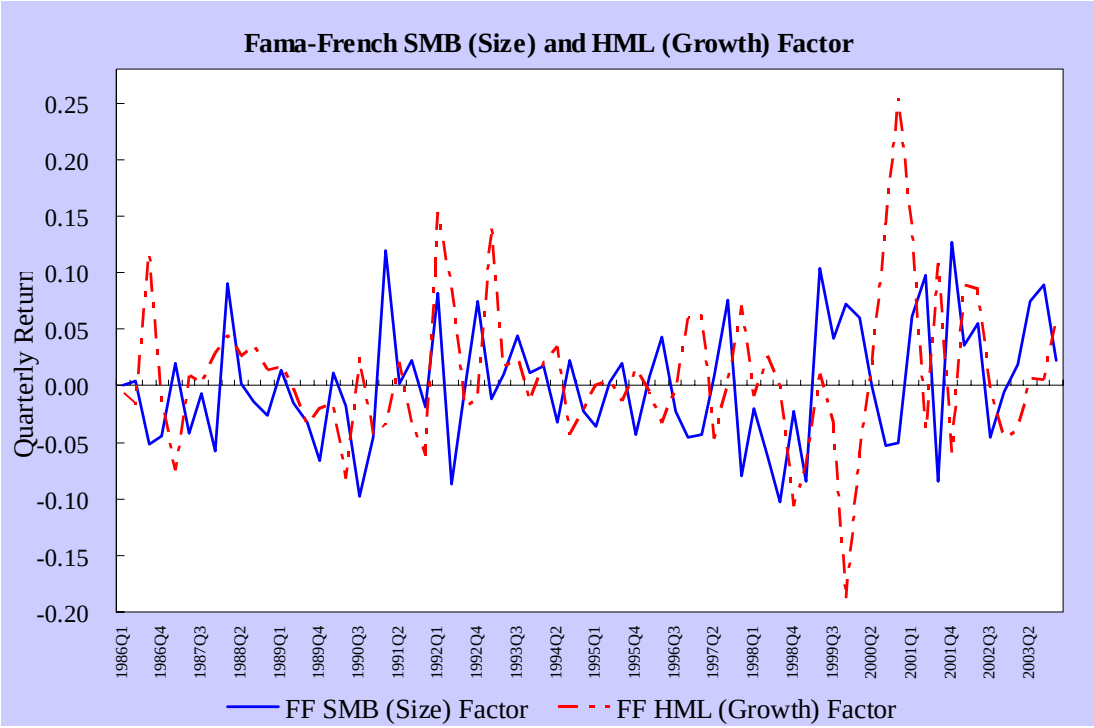
Fama-French factor returns are not widely used in previous studies. However, Huang and Ritter (2004) included the size factor (*SMB*) as one of the explanatory variables proxing for the cost of equity in their empirical test of the windows-of-opportunities theory. They first demonstrated that the size discount[41] reduces the proportion of firm's financing deficit[42] funded with net debt issues, although not statistically significant. Their results further showed that *SMB* is significantly positively associated with high propensity to choose equity over debt, indicating that firms are more likely to choose equity when investors favor small cap stocks, which potentially reflect period of increased risk appetite.

In this study, the value of *SMB(t)* and *HML(t)*, constructed using all NYSE, AMEX and NASDAQ stocks, are obtained from WRDS (the Wharton Research Data Services).

[41] The value of the SMB return, which reflect a size discount for big size stocks.

[42] Firm financing deficit (DEF) is defined in Huang and Ritter (2004) as the change in assets minus the change in retained earnings scaled by beginning-of-year assets, similar as in Shyam-Sunder and Myers (1999).

Chart 6.4 Time-series Variation in Fama-French Size and Growth Factor



Source: WRDS (the Wharton Research Data Services website, available at http://wrds.wharton.upenn.edu/)
SMB(t), small-minus-big, is the difference in average return on portfolios of small-cap stocks and portfolios of large-cap stocks. While *HML(t)*, high-minus-low, is the difference in average return on portfolios of high book-to-market equity and portfolios of low book-to-market equity. The value of *SMB(t)* and *HML(t)* are constructed using all NYSE, AMEX and NASDAQ stocks.

6.3.3 Debt Capital Market (ECM) Timing Variables

Debt capital market variables include inflation, real short-term interest rate, long-term government bond yield, term-spread of interest rate and credit-spread of corporate bond yield.

6.3.3.1 Inflation

Quarterly percentage changes in CPI (Consumer Price Index) are used as proxy for inflation. Fisher effect suggests that inflation premium is embraced in nominal interest rate and is largely independent of the real rate of interest rate, which is supposed to reflect the marginal rate-of-return on the nation's capital stock. Since debt interest and principal payments are expressed in normal rather than real terms,

inflation will affect the real cost of debt borrowing and consequently influence firm's borrowing decision.

Baker, Greenwood and Wurgler (2003) demonstrated that inflation has significant predictive power of excess bond returns. They further showed that the portion of long-term debt in aggregate debt issue is negatively related to inflation. In a more recent study, Huang and Ritter (2004) used inflation as one of the controlling variables in modeling firm's debt-equity choice. They found consistent negative relation between inflation and the propensity to issue equity. The authors suggested that inflation is potentially linked to the relative cost of external equity versus debt.

6.3.3.2 Interest Rate

Consistent with previous literatures, we consider real short-term interest rate and long-term government bond yield in modeling REITs financing decisions. Real short-term interest rate is proxied by the difference between 3-month T-bill rate and the inflation during the corresponding period, while long-term interest rate is proxied by 10-year government bond yield. Although nominal short-term rate has a high correlation (0.80) with long-term government bond yield, the correlation between real short-term rate and 10-year bond yield is relatively low (0.27). The trends of these three rates are depicted in Chart 6.5.

The importance of interest rates in firm's financing decisions can never be overstated. Interest rates are the most important variables in gauging debt capital market conditions. They also affect the valuation of equity shares through their role in determining the required rate-of-return by investors.

Besides the issue timing choice, interest rates also affects issuer's choice between debt and equity. For instance, in an extremely low interest rate environment, firm may prefer debt securities even if the equity market performs well and shares are valued at a relatively high level, as what happens in 2003 in the U.S. market.

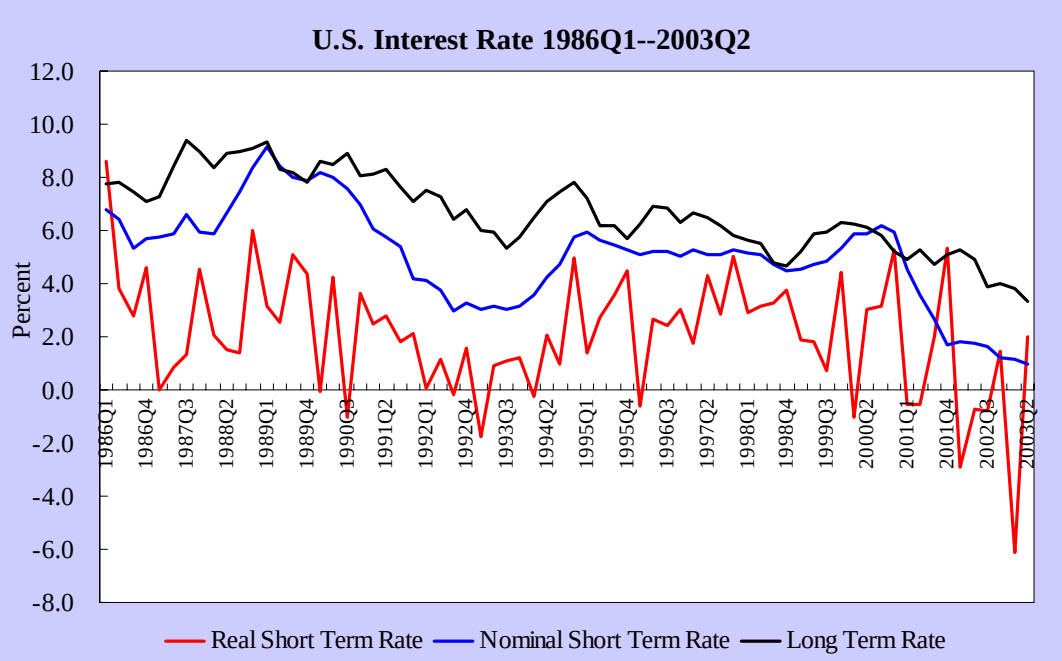
For REITs industry in particular, interest rates affect their financing decisions in various dimensions. First and most importantly, interest rates serve as benchmarks for the cost of both debt and equity capital. Second, interest rate partially reflects the state of the economy in general and the outlook of real estate market in particular. Specifically, rising interest rate may increase financing cost of REITs, however, it may also indicate improvement in future cash-flows generated by underlying property investments. Thirdly, interest rate affects the desirability of REITs as a particular asset class and the flows of capital into the industry. Generally speaking, a lower interest rate environment will increase the relative attractiveness of REITs in comparison to other asset classes such as fixed-income.

There is a perception that REITs share prices are unusually inversely correlated with interest rates, and that REITs will suffer disproportionately if rates rises, just as the way many think insurance company or bank stocks will behave in face of rising interest rates. In fact, a number of REITs investors and analysts found that it's not necessarily true. They argue that there is an impact of rates rise on REITs shares, just as there's an impact on all stocks. However, the impact on REITs stocks is no worse than the average stock and less than other financials stocks

Empirically, Frank and Goyal (2003b) found that a high T-bill rate is followed by increased leverage, partially due to issuers rushing to lock in current rate level before it

goes higher. Baker, Greenwood and Wurgler (2003) showed that real short-term rate is predictive of future excess bond returns, and the portion of long-term debt to total debt issued is negatively correlated with real short-term rate, indicating that firms time debt capital market conditions in their debt maturity choices. In addition, Ooi (1998) provided strong evidence that interest rate has a significant influence on U.K. property firm's financing decisions. In particular, he showed that property company times its debt issues to coincide with periods of low interest rates. His results further show that these debts are generally of longer maturity and collateralized.

Chart 6.5 U.S Interest Rate 1986Q1-2003Q2



Source: Federal Reserve Database
Real short-term rate is proxied by the difference between 3-month T-bill rate and the inflation during the corresponding period, nominal short-term rate is the 3-month T-bill rate, while long-term rate is proxied by 10-year government bond yield.

6.3.3.3 Term Spread

Term spread, measured as the spread between 10-year constant-maturity government-bond and 1-year constant-maturity treasury-bill yield, is another important barometer in determining debt capital market condition. According to the pure expectation

theory, term spread reflects investors' expectation of future interest rate movement and therefore affects their current risk appetite. Term spread is one of the three debt capital market variables found significant in predicting future excess bond returns and affecting firm's debt maturity choices in Baker, Greenwood and Wurgler (2003). Frank and Goyal (2003b) also considered this factor in their empirical examinations.

6.3.3.4 Credit Spread (Default Risk Premium)

Default risk premium reflects the dynamics of investors' demand for high-yield (risky) assets vis-à-vis high-quality (low risk) assets, which depends on prevailing economic conditions. Specifically, when the economy experiences a recession or a period of uncertainty, demand for "quality" assets increases while that for "risky" assets decreases. Consequently, the required yields for high-quality assets (such as investment-grade bonds or REITs) decrease as investors bid up their prices, resulting in higher credit spread. The mechanism works in the opposite direction during periods of benign economic conditions when investors walk up the risk spectrum and show greater demand for riskier assets which potentially offer higher yield. Therefore, from an issuer's perspective, different credit spread implies different windows-of-opportunity to come to the market for capital.

Credit spread is used in a number of previous studies about firm financing activities. For instance, Baker, Greenwood and Wurgler (2003) included credit spread in their debt maturity timing study. However, they didn't detect significant predictive power of this variable for future excess bond return, neither did they find significant link between credit spread and firm debt timing activities. Similarly, Frank and Goyal (2003b) concluded that, neither credit spread nor term spread has important effect on firm's leverage in their study.

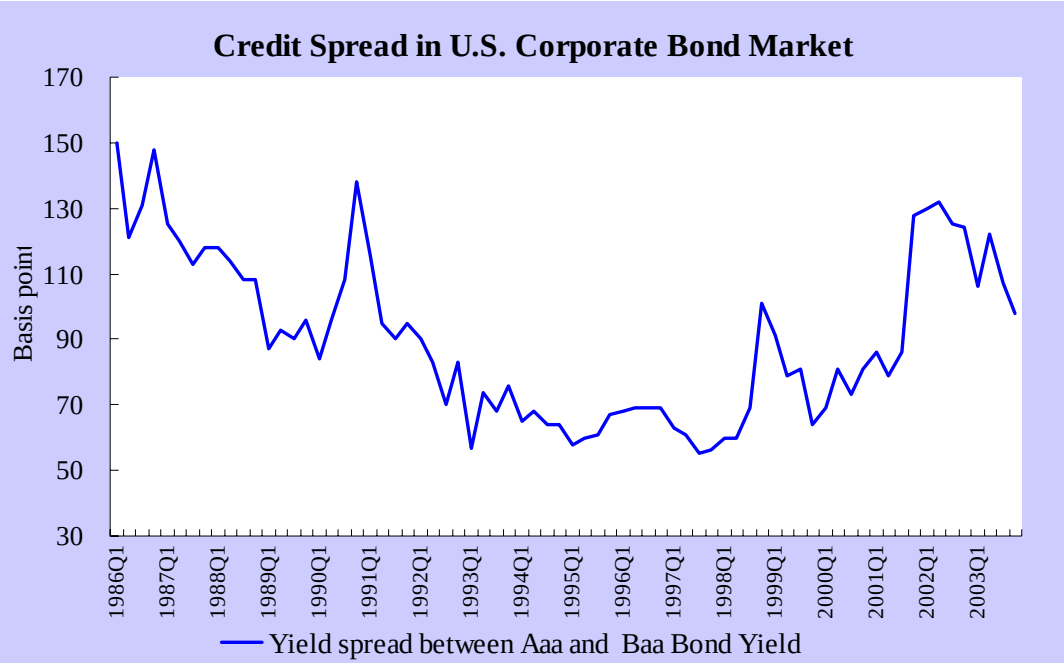
Nonetheless, for REITs sector in particular, credit spread dynamics in the debt capital market might be an important consideration in their financing decisions. In recent years, a combination of perception of major event risk, accounting restatement fraud and inadequate corporate governance in the broader, non-real estate corporate world has resulted in a significant widening of bond spreads for larger investment-grade corporations across an array of industries (Chart 6.6). In contrast, investors perceive REITs to be more insulated from deteriorating credit quality and rating agency downgrades.[43] As a result, corporate unsecured bond market for REITs flourished.

In this study, credit spread is measured as the difference between Aaa-rated and Baa-rated corporate bond yield, expressed in basis point.[44]

[43] Data from COMPUSTAT shows that, although not all REITs have investment-grade rating (49 out of the 62 rated by S&P at as 2002), cases of rating downgrade are also rare for REITs. Their credit ratings are unusually stable. Sam Zell, chairman of Equity Group Investments of Chicago, gave three reasons why publicly-held REITs have escaped the recent wave of corporate scandals. First is the necessity to create cleaner companies after the 1989-92 recession that played havoc with the real estate industry. The second reason is that the nature of REITs business doesn't lend itself to the same amount of managerial discretion as firms in other industries, especially due to the high dividend payout requirement. The third reason is the high level of ownership by management. No other segment in S&P 500 has a higher concentration of ownership by management than the REITs do. So the "principal and agent" problem is reduced and there is less incentive for REITs managers to cheat investors. From *Why Real Estate Escaped the Recent Wave of Scandals*, *Knowledge at Wharton*, June 2004.

[44] Federal Reserve Database only provides bond portfolio returns using Moody's rating system. Moody's Aaa and Baa rating corresponding to S&P AAA and BBB rating, which is from COMPUSTAT.

Chart 6.6 Credit Spread in U.S. Corporate Bond Market



Source: Federal Reserve

6.3.4 Firm Specific Variables

Previous studies identified a number of firm-specific variables as significant determinants of firm leverage ratio. It is reasonable to assume that these intrinsic factors also weigh heavily in individual firm's financing decisions, even if they face the same external capital market conditions. For instance, a firm with already high debt-ratio or poor interest service ability may find it still very costly to issue new debt securities even the external debt capital market condition is very favorable. Similarly, larger firms may have higher bargaining power over investors and possess certain advantages in timing their issuance. Thus, we include a number of REITs specific variables in our study to control for such firm-specific characteristics, namely firm size, profitability, debt rating, and leverage ratio.

6.3.4.1 Firm Size

Harris and Raviv (1991) showed that leverage increases with firm size. Similarly, Hovakimian, Opler and Titman (2001) suggested that firm target leverage ratio is positively correlated with its size. They argued that cash-flows of larger and more diversified firms are more stable, and this reduced cash-flow volatility increases the probability that the firm will be able to fully use tax shields from interest payments, while at the same time reduces the probability and expected costs of bankruptcy. Furthermore, survey evidence of Graham and Harvey (2001)'s also found that CFOs of large-cap and dividend-paying firms are more likely to time treasury rate. In addition, firm size may also relates to the degree of information asymmetries, as larger firms are more likely to have the resources to disseminate more information about their firms to investors. Consistent with previous studies, we use natural logarithm of REIT total asset to proxy for firm size, lagging one period (i.e. the beginning-quarter asset size of the REIT).

6.3.4.2 Profitability

Profitability is found to be another significant determinant of capital structure in previous studies. However, different theories have different predictions about the relationship between profitability and firm leverage. For instance, the trade-off theory posits that profitable firms should be more levered to take full advantage of the debt tax shield. In contrast, pecking-order theory predicts that more profitable firms have more financial slacks and use less external debt, thus end up with lower debt-ratio.

Empirical evidence, however, seems to support the latter one. Both Harris and Raviv (1991) and Rajan and Zingales (1995) demonstrated negative relation between leverage and firm profitability. Moreover, Titman and Wessels (1998) showed that highly

profitable firms often use their earnings to pay down debt and are usually less levered than their less profitable counterparts. Studying the effect of profitability on firm financing decisions, Hovakimian, Opler and Titman (2001) found that more profitable firms are more likely to issue debt rather than equity and more likely to repurchase equity rather than retire debt. They argued that such behavior is consistent with their conjecture that the most profitable firms become under-levered and that firms' financing choices tend to offset these earning-driven changes in their capital structures.

There are several metrics evaluating a REIT's profitability[45], among them are fund from operation (FFO), net income, free cash-flow, as well as operating cash-flow. Consistent with previous researches, we use net income scaled by total asset in our study to proxy for REITs profitability.

6.3.4.3 Debt Rating

It is reasonable to assume that REITs with better rating have better access to external capital, possibly due to less information asymmetry problem. Chart 6.7 gives a snapshot of REITs rating profile at 2002. Overall, less than half of REITs in the U.S. are rated by credit agencies such as S&P and Moody's. However, near 80 percent of the rated ones are of investment-grade, though normally at the lower-end of the spectrum (among the 144 REITs studied, 62 are rated by Standard & Poors, of which 49 are investment-grade issuers).

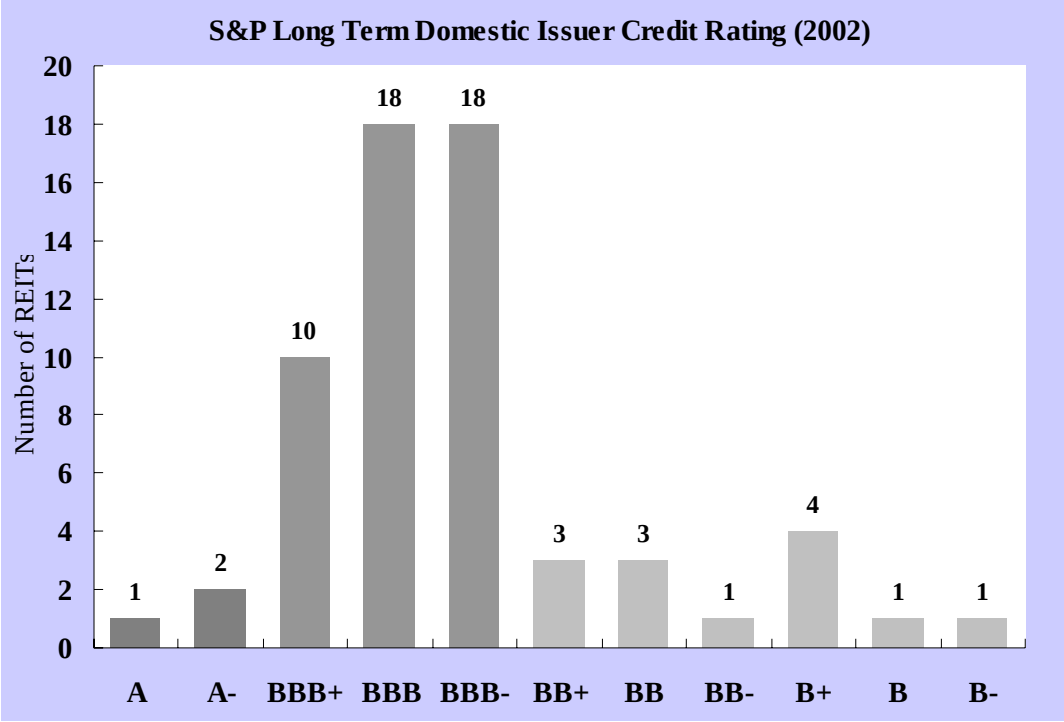
We use a dummy variable to capture the potential effect of strong debt rating on REIT's financing decisions[46]. The variable is coded 1 if a REIT is rated investment-

[45] A detailed discussion about the various measures of REITs profitability is in endnote 3.

[46] The S&P Long-Term Domestic Issuer Credit Rating at the end of 2002 from COMPUSTAT is used.

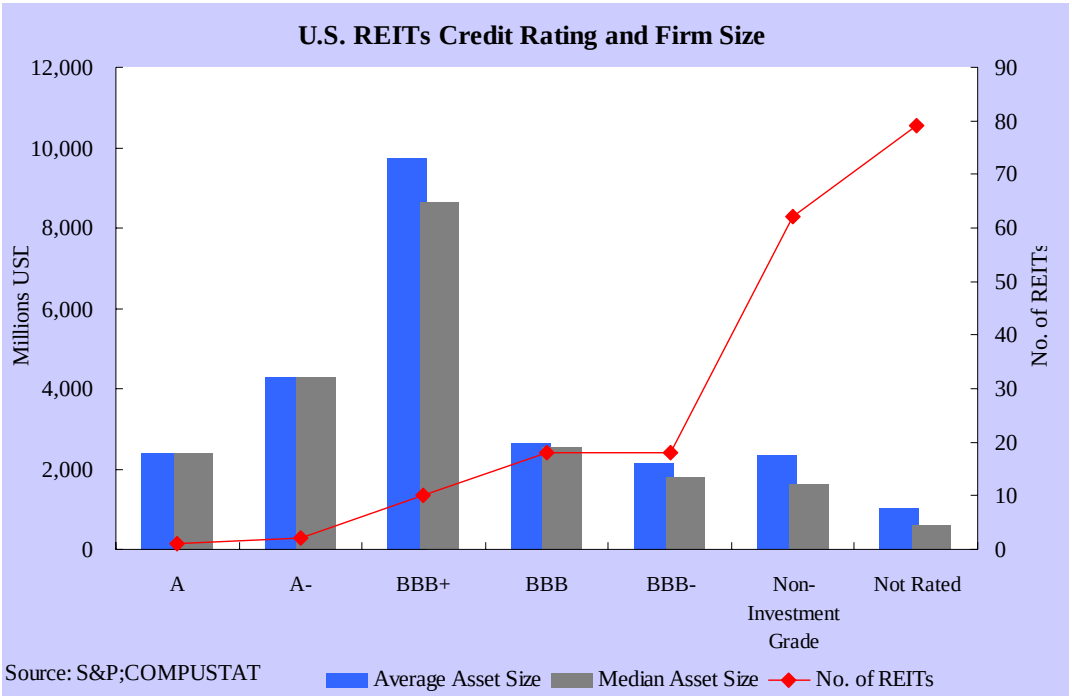
grade, 0 if it is non-investment grade or not rated. Although bigger firms tend to get better rating, Chart 6.8 demonstrates that the correlation is far less from perfect.

Chart 6.7 Credit Rating Profile of U.S. REITs (2002)



Source: COMPUSTAT, ratings higher than BBB (including BBB-) are considered investment grade.
The S&P Long-Term Domestic Issuer Credit Rating at the end of 2002

Chart 6.8 U.S. REITs Credit Rating and Firm Size (2002)



6.3.4.4 Firm Leverage

Consistent with Baker and Wurgler (2002), current debt ratio is used to control for any leverage-related motivation for REITs financing decisions. For instance, a REIT already with debt overhanging problem may find it unfeasible to issue more debt even if debt market condition are favorable. Similarly, a REIT with extremely low debt-ratio may wish to issue debt even though its stocks appear to be overvalued. In this study, the ratio of total-liability over total-assets is used as a simple measure of REIT leverage. As in previous literature, the variable is lagged on period.

6.3.4.5 Asset Tangibility

Both pecking-order hypothesis and trade-off theory suggest asset tangibility to be an important factor in firm leverage decision, even though the relationships they predict are different. Specifically, pecking-order hypothesis suggests that firms with fewer tangible assets would have greater asymmetric information problem. Consequently, these firms will accumulate more debt over time and become more highly levered. In other words, asset tangibility and firm leverage are negatively related. In contrast, trade-off theory argues that tangible assets naturally serve as collaterals and intuitively, more tangible assets are associated with more borrowing. Empirically, asset tangibility is shown to be positively correlated with leverage ratio in Harris and Raviv (1991).

However, for REITs companies, there are not much cross-sectional variations in the ratio of asset tangibility, as the vast majority of REITs assets are property investment. Balance-sheet data shows that property-related investments account for more than 90% of total-assets for the industry as a whole. Firm-level asset tangibility averages at 89%, with a standard deviation of less than 13%. Hence, we drop this variable in our later regression.

6.4 Chapter Summary

This chapter first introduces the research data used in the study, including their sources and scopes. We then discuss the process of identifying REITs financing activities through cash-flow statement. Section 6.4 discusses in detail the dependent variables as well as explanatory variables used in later empirical study.

CHAPTER SEVEN

Empirical Test of Market-Timing Hypothesis

This chapter carries out empirical tests of REITs market-timing using firm-level data. Specifically, Section 7.1 examines REITs market-timing by looking at their choices of the time and form of financing activities. An equally important aspect of market-timing, the debt-maturity timing is modeled in Section 7.2. Section 7.3 further explores REITs timing initiatives by identifying the determinants of the financing transactions size.

7.1 The Timing Choice of REITs Financing Activities

Pooling firm-quarter observations together, we use multinomial logistic model to examine REITs' market-timing initiatives. In other words, we jointly model the possibilities of the five types of REITs financing decisions[47] in relation to the independent variables capturing capital market dynamics.

Table 7.1 shows the correlation coefficients matrix of the independent variables. Overall, the correlations between the capital market variables are reasonably low. In particular, general-stock-market-return is only moderately correlated with REITs sector-return (0.243). In addition, correlations among the four debt capital market variables are also moderate, indicating that the four variables specified capture different aspects of risk factors in the debt capital market.

[47] Namely equity issue/repurchase, net debt increase/reduction and dual offering, identified in Section 6.2.

Considering the close tie between REIT's P/E ratio and dividend yield, we run the multinomial logistic model using two specifications, each including one of the two variables. The output of the multinomial logistic models is presented in Table 7.2. In addition, we substitute the absolute P/E ratio with relative P/E (the ratio of individual firm's P/E to REITs sector P/E, proxied by Datastream REITs Index P/E ratio), the regression results, although not presented, are virtually the same.

Table 7.1 Correlation Matrix of Capital Market Variables (1986Q1—2003Q2)

	SP_R4Q	NAREIT_R4Q	FF_SMB	FF_HML	GB_10Y	GB_TS	REAL_GB_3M	CBS
SP_R4Q	--	0.243	-0.110	-0.248	0.244	-0.400	0.399	-0.302
NAREIT_R4Q	0.243	--	0.118	0.364	-0.118	0.210	0.037	-0.171
FF_SMB	-0.110	0.118	--	-0.211	-0.112	0.295	-0.216	0.053
FF_HML	-0.248	0.364	-0.211	--	-0.071	0.077	-0.113	-0.047
GB_10Y	0.244	-0.118	-0.112	-0.071	--	-0.163	0.269	0.180
GB_TS	-0.400	0.210	0.295	0.077	-0.163	--	-0.482	0.281
REAL_GB_3M	0.399	0.037	-0.216	-0.113	0.269	-0.482	--	0.038
CBS	-0.302	-0.171	0.053	-0.047	0.180	0.281	0.038	--

SP_R4Q is the S&P500 index price return of previous 4 quarters; NAREIT_R4Q is the NAREIT e-REITs index price return of previous 4 quarters; FF_SMB is the return for Fama-French SMB(small-minus-big) factor, which is the difference between small and big size equity portfolio return; FF_HML is the return for Fama-French HML(high-minus-low) factor, which is the difference between high and low boon-to-market equity portfolio return; GB_10Y is the 10-year Government bond yield; GB_TS is the term spread of interest rate proxied by the difference between the yields of 10-year and 1-year Government bond yield; REAL_GB_3M is the real short-term interest rate, proxied by the difference between 3-month Treasury bill rate and the inflation rate of corresponding quarter; CBS is the credit spread of corporate bond yield, proxied by the difference between the yields of high-quality (Aaa rated) and high-yield (Baa rated) U.S. corporate bond. All data are of quarterly frequency from 1986Q1 to 2003Q2.

Summary statistics of the multinomial logistic model in Table 7.2 suggest that the model fits the observed data nicely. Likelihood-ratio test in Table 7.3 further indicates that the explanatory variables specified are significantly related to the five types of REITs financing activities.

Table 7.2 Multinomial Logistic Regression of REITs Financing Activities

This table presents the results of multinomial-logistic-regression modeling the probability of the occurrence of a certain type of financing activity in a given quarter. The probability of such financing activity taking place is linked to two groups of explanatory variables reflecting debt and equity capital market conditions, as well as one group of firm-characteristic controlling variables. Firm-quarter observations during which no financing activities are observed are taken as baseline scenario.

		Equity Issuance [Dependent Variable=1]		**Equity Repurchase** [Dependent Variable=2]		**Net Debt Increase** [Dependent Variable=3]		**Net Debt Reduction** [Dependent Variable=4]		**Dual Issuance** [Dependent Variable=5]	
Variables	**Variable Abbr.**	**Spec.(1)**	**Spec.(2)**	**Spec.(1)**	**Spec.(2)**	**Spec.(1)**	**Spec.(2)**	**Spec.(1)**	**Spec.(2)**	**Spec.(1)**	**Spec.(2)**
Constant	C	-1.928**	-2.621***	-10.259***	-9.133***	1.258***	0.705*	-2.821***	-3.798***	4.185***	3.310**
M/B Ratio	MB	0.053	0.053	0.081	-0.023	0.094***	0.084***	-0.130**	-0.327***	0.011	-0.004
Dividend Yield	DY	--	-0.013	--	-0.145***	--	-0.012	--	-0.047***	--	-0.013
P/E Ratio	PE	0.013***	--	-0.006	--	0.000	--	-0.031***	--	0.004	--
Firm Price Return Previous 4Q	PR_4Q	1.300***	1.229***	0.928	0.443	0.370*	0.406***	0.946***	0.661***	1.226***	1.111***
S&P 500 Return Previous 4Q	SP_R4Q	3.272***	3.321***	-3.142**	-3.447***	1.114***	0.843***	0.074	-0.485	5.068***	4.595***
NAREIT Return Previous 4Q	NAREIT_R4Q	0.151	0.102	1.515	1.970	-0.087	-0.270	-0.915	-0.563	1.358	1.382
Return for Fama-French Size Factor	FF_SMB	-4.864***	-4.473***	-1.060	-1.055	-3.632***	-3.265***	0.164	-0.079	-8.364***	-8.252***
Return for Fama-French Growth Factor	FF_HML	1.175	1.025	-6.823**	-7.072**	-1.969***	-1.848***	1.267	0.637	-3.832*	-3.969*
10-Year Gov. Bond Yield	GB_10Y	-0.160**	-0.147**	0.091	0.101	-0.116***	-0.111***	0.072	0.133**	-0.604***	-0.633***
Term Spread of Interest Rate	GB_TS	0.473***	0.441***	-0.893***	-1.131***	-0.015	-0.086	0.168*	0.157*	0.250	0.162
Real Short Term Interest Rate	REAL_GB_3M	0.111***	0.106***	-0.077	-0.077	0.008	0.012	0.026	0.027	0.057	0.019
Credit Spread of Corp. Bond Yield	CS	-0.007*	-0.007*	0.027***	0.028***	-0.008***	-0.006***	-0.010***	-0.012***	-0.018**	-0.018**
Long Term Debt Rating	RATING	0.600***	0.578***	0.224	0.118	0.064	0.032	0.021	-0.239	0.325	0.219
Firm Profitability	PROFIT	-7.299***	-6.067***	2.985	2.636*	-5.923***	-4.506***	-2.293*	-0.739	-23.352***	-18.525***
Firm Size (lagging one period)	LN_TA	-0.039	0.098	0.550***	0.573***	-0.129***	-0.041	0.033	0.162***	-0.493***	-0.260**
Firm Leverage (lagging one period)	LEVERAGE	-0.265	-0.178	0.393	0.185	0.099	-0.007	2.394***	2.701***	0.748	0.407
	Observations	252	268	43	46	1094	1197	243	310	142	148

	Pseudo R-Square			Model Fitting Information		Total Observations
	Cox and Snell	Nagelkerke	McFadden	Chi-Square	Significance	
Specification(1) [excluding DY]	0.170	0.191	0.084	860.476	0.000	4610
Specification(2) [excluding P/E]	0.164	0.186	0.083	952.037	0.000	5299

*, **, *** denote significance at 10%, 5% and 1% respectively

Two reasons account for the reduction in the number of financing activities included in the regression than the number of events identified in Section 6.2. Firstly, multinomial logistic model can only accommodate mutually-exclusive events, while in our sample, many firm-quarter observations witness two types of financing activities taking places simultaneously. Except for the dual offering scenario, these observations are excluded from the regression. Secondly, the sample sizes (number of observations) are automatically adjusted in the econometric software to include only those observations for which all explanatory variables are available.

Table 7.3 Likelihood Ratio Tests of the Multinomial Logistic Model

		Chi-Square		Significance	
Variables	**Variable Abbr.**	**Specification (1)**	**Specification (2)**	**Specification (1)**	**Specification (2)**
Constant	C	--	--	--	--
M/B Ratio	PB	22.345	56.413	0.000	0.000
Dividend Yield	DY	--	20.658	--	0.001
P/E Ratio	PE	26.824	--	0.000	--
Firm Price Return Previous 4Q	PR_4Q	37.944	44.117	0.000	0.000
S&P 500 Return Previous 4Q	SP_R4Q	74.543	75.748	0.000	0.000
NAREIT Return Previous 4Q	NAREIT_R4Q	4.813	5.111	0.439	0.402
Return for Fama-French Size Factor	FF_SMB	40.122	38.191	0.000	0.000
Return for Fama-French Growth Factor	FF_HML	19.048	18.497	0.002	0.002
10-Year Gov. Bond Yield	GB_10Y	34.788	45.043	0.000	0.000
Term Spread of Interest Rate	GB_TS	30.713	40.705	0.000	0.000
Real Short Term Interest Rate	REAL_GB_3M	9.634	9.142	0.086	0.104
Credit Spread of Corp. Bond Yield	CS	31.317	36.263	0.000	0.000
Long Term Debt Rating	RATING	14.633	17.145	0.012	0.004
Firm Profitability	PROFIT	128.213	109.689	0.000	0.000
Firm Size (lagging one period)	LN_TA	28.273	27.596	0.000	0.000
Firm Leverage (lagging one period)	LEVERAGE	38.422	63.130	0.000	0.000

Statistics obtained from SPSS. Likelihood ratio test examine whether the independent variables specified in the final model is significantly related to the dependent variable. The Chi-Square statistics is the difference in log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

As in Table 7.2, REITs stock offering decisions are shown to be significantly driven by temporarily high equity valuation. Specifically, this valuation effect is mainly taken on by P/E multiplier, as high P/E ratios are found to be significantly associated with greater tendency to issue equity. In contrast, market-to-book ratios, although emphasized in some previous studies for its role in firms' market-timing activities, are found to have no statistically significant impact in either the equity issuance or repurchase decisions of REITs. Thus, our result indicates that REITs pay more attention to P/E rather than M/B in timing the market valuation of their shares.

High and stable dividend-yield of REITs vis-à-vis other asset classes is one of the most important attractions offered by REITs stocks. However, our results suggest that REITs have no tendency to time dividend-yield when making their securities offering decisions, as dividend-yield is found to be insignificant in both equity issuance and net debt increase cases (probably due to the fact that REITs dividends are sticky and less volatile than equity valuations such as P/E ratio, as we pointed out in Section 6.3.). In contrast, we found that low current period dividend-yield increases the probability of both equity and debt repurchases. Anecdotal evidence suggests that REITs tend to repurchase preferred shares that are paying high dividends when current investor-demanded dividend yield in the market place is low. Nevertheless, the rationale for the negative coefficients in the net debt reduction cases is less obvious and warrant further investigation.

Results from the three share price-return related variables, namely individual REIT share return, S&P500 index return and NAREIT e-REITs index return, provide the most compelling evidence of REITs market-timing. For instance, REITs equity offering decisions (including the special cases of dual offering) are significantly driven

by appreciations in REIT's own share price and run-ups in general stock market (proxied by S&P500 index return) during the four quarters prior to the offering decisions. These results are consistent with Hovakimian, Opler and Titman (2001), Masulis and Korwar (1986) and Asquity and Mullins (1986), in which U.S. firms are found to have a higher propensity to issue equity following an increase in stock price. However, although conventional wisdom suggests that firm also considers the performance of other equities in the same sector when deciding an equity offer, the regression results indicate that REITs sector share-performance proxied by NAREIT index return is not important at all in individual REIT's financing decisions. This is consistent with our previous observation in Section 5.1 of the stronger correlation between REITs sector-aggregate equity offering and broader equity market performance than with the share performance of REITs sector itself. This finding indicates that general stock market sediment is more important than sector specific performance in REITs equity issues timing. In other words, when the whole stock market is in a state of "exuberance" (maybe "over-exuberance" as in 1998), REITs will have higher propensity to issue equity despite dismal share performance of the sector itself.

The regression results further suggest that, even REITs' net debt issuance decisions are strategically coincided with favorable conditions in the general stock market. However, firm level share performance plays a less important role in the net debt issuance cases, as the weight of individual REITs share return quickly diminishes (only significant at 10% level). This is consistent with Frank and Goyal (2003b)s' finding that firms increase their leverage (indicating debt offerings) when stock market as a whole rises.

On the other hand, the negative coefficient for general stock market return in equity repurchase decisions indicates that, continuous decline in the broader market significantly increases the probability for REITs managers to repurchase equity. This outcome is consistent with the empirical observations in Hovakimian, Opler and Titman (2001). However, the repurchase is probably triggered by the deteriorations in market sentiment rather than by stock valuation considerations (as none of the two valuation-metrics is found significant in the equity repurchase cases).

The outcome from the multinomial regression further suggests that REITs time the dynamics in investors' risk appetite and preference in their security offering. Specifically, REITs are found to refrain from issuing equity when the Fama-French size factor-return (i.e. SMB--the difference between the return of small-cap portfolio over large-cap portfolio) is high. This holding-back in REITs equity offering runs in contrast to the finding of Huang and Ritter (2004), who showed a positive relationship between SMB factor-return and the propensity of industrial firms to issue equity. Similarly, high SMB factor-return significantly reduces the possibility of REITs making net debt increase decisions. High SMB factor-returns, most likely resulted from strengthened demand for small-cap shares vis-a-vis larger-cap ones, reflect the increases in the risk appetite of investors. As a result, the potential demand for security offered by less-risky sectors such as REITs may effectively drop, as investors are pulling their money out of safer sectors to venture in riskier ones, thus explaining the opposite direction of effect for SMB factor found in our study with that in Huang and Ritter (2004).

However, coefficient for HML factor-return (i.e. the difference between the return of value-stock portfolio over growth-stock portfolio), although have the expected positive

sign in the equity issuance regression, is not statistically significant. This indicates that investors' preference for value vs. growth stock has little effect in affecting REITs equity offering decisions. Some real estate industry practitioners suggest that, although REITs stocks are perceived as value stocks for most of the period, during certain periods, especially those periods when REITs actively issue shares to acquire properties into their portfolios (often at a deep discount to the book-value of the properties after the real estate sector depressions), REITs actually exhibit characteristics of growth-stocks from a technical perspective. For instance, in term of the growth rate in their earnings, which is far greater than the long-term average. These shifts in the "style" of REITs stock might result in the insignificance of the HML factor-return in the equity issuance regression.

Results regarding interest rates and bond spreads show further indications of REITs market-timing. Firstly, REITs are less likely to issue both debt and equity securities when long-term government bond yields are high. In particular, net debt increase is most sensitive to higher long-term interest, while the negative relationship between long-rates and the likelihood of REITs equity offering is less pronounced (significant at 5% level). As long-term government bond yield is often considered as benchmark for the yield of other asset class, a higher long-rate translates into higher financing cost for both equity (through it's role in determining the level of dividend yield REITs stocks have to offer) and debt for REITs, and thus reduces firms' willingness to issue securities during such periods. This finding is consistent with Barry et. al (2003) on U.S. industrial firms as well as Ooi (1998) about UK property companies.

Current period term-spread is found to be a statistically significant driver of REITs equity issuance decisions. The expectation theory suggests that a high current yield

spread points to the possibility of rising interest rates in the future. In addition, Baker, Greenwood and Wurgler (2003) demonstrated that higher term-spreads predict higher excess bond returns, which translate into higher cost from the issuers' perspective. Consequently, instead of offering debt securities, REITs choose to issue equity when they need external capital. This is another evidence that REITs opportunistically switch between debt and equity according to their relative cost.

REITs are shown to have greater tendency to issue equity in the face of high real short-term interest rates. Real interest rate is closely associated with economic conditions in general and property market outlook in particular. Specifically, high real-rates indicate better outlook for the property market as improved economic conditions will result in increasing future income for investment-properties, while at the same time, high rates also put pressure on property valuations (through capitalization rate). Consequently, the combination of the two effects translates into better buying opportunities for REITs, which drive them to issue equity to fund new property purchases. This preference of equity over debt for property acquisitions is consistent with Brown and Riddiough (2003)'s argument that proceeds from REITs equity offers are more likely to fund investment, whereas public debt offers are typically used to reconfigure the liability structure of the firm.

In contrast to Frank and Goyal (2003b)'s finding of no significance of credit spread in firms' leverage decisions, high credit spread reduces the possibility of REITs debt issuance. A tightening in the yield spread reflects a decrease in investors' risk appetite for corporate securities which are riskier than government bonds. This growing caution of investors implies either a reduction in the potential demand or an escalation in the required-return for corporate securities, thus reducing the desirability of debt

offering from the firm's perspective.

Lastly, results from firm-characteristics controlling variables offer a number of interesting observations. First, investment-grade credit rating is shown to be an important characteristic associated with REITs equity issuers, indicating that such REITs are more active equity market players. However, better rating is surprisingly not significant in the debt increase decisions. Second, the significant negative coefficients for firm profitability recorded in all fund raising activities (equity issuance, net debt increase and dual offering) suggest that REITs financing activities are closely related to their operating performance. The negative signs indicate that, poor performance propels REITs to tap external capital while insufficient cash flow is generated during the corresponding period. This confirms Fama and French (2002)'s proposition that external capital is used to absorb the short term variation in earnings and investments. Third, REITs of larger size are more inclined to repurchase equity and less likely to issue debt in comparison to smaller REITs. This finding is different from Graham and Harvey (2001)'s survey results that CFOs of large-cap industrial firms are more likely to attempt debt market-timing, indicating that size doesn't matter in market-timing in the REITs sector. Finally, coefficient for firm-leverage suggests that debt overhanging plays important role in debt reduction decisions, as high leverage ratio is associated with greater tendency to reduce debt obligation.

7.2 The Debt Maturity Timing

The multinomial logistic test in Section 7.1 yields convincing evidences about REITs market-timing initiatives in conducting their financing activities. In this section, we move beyond the examination of the choices of the time and types of financing action to a more detailed aspect of market-timing: the debt-maturity timing. Specifically, Baker, Greenwood and Wurgler (2003) investigated firm debt-timing from the perspective of debt-maturity decisions. Their evidence suggested that firms issue more long-term debt when the expected future bond returns are low. The empirical evidence is complemented by finding in Graham and Harvey (2001)'s survey that CFOs attempt debt market-timing when deciding on the maturity of debt securities. However, Baker, Greenwood and Wurgler (2003)'s analysis is based on aggregate data rather than firm level data (two sources of aggregate level data are used in their study, both the Federal Reserve flow-of-funds data and firm-by-firm aggregations of COMPUSTAT data). Our study, on the other hand, approaches this question using REITs firm level data, since NAREIT provides the detailed profile of REITs public debt offering.

Consistent with Baker, Greenwood and Wurgler (2003), we employ inflation, long-term bond yield, term-spread and credit-spread to capture debt capital market conditions. In addition to the four firm-characteristics controlling variables considered in previous multinomial logistic regression, market-to-book ratio is also included as one firm-level controlling variable, as Guedes and Opler (1996) found that firms with stronger growth opportunities, proxied by market-to-book ratio, tend to issue debt of shorter maturity.[48] Finally, four dummy variables are introduced to account for the different

[48] Asymmetric information arguments by Flannery (1986), Kale and Noe (1990), and Diamond (1993) also suggest that firm with prospects more favorable than the market expects will choose short- over long-term debt. Their

types of debt securities, namely median-term notes, mortgage-backed-securities, convertible bonds and float-rate notes. Consistent with Guedes and Opler (1996), we use the logarithm of the maturity of REITs public debt as the dependent variable. Table 7.4 presents the results of the regression.

Table 7.4 OLS Regression of Debt Maturity Timing

This table presents the results of OLS regression modeling the maturity of public debt securities offered by REITs. REITs public debt offering of 1986Q1—2003Q2 are included in the regression, data is from NAREITs. Consistent with Guedes and Opler (1996), the dependent variable is the logarithm of the maturity of REITs public debt. The maturity decision is linked to one group of explanatory variables reflecting debt capital market conditions, as well as two groups of controlling variables for firm-characteristic as well as types of public debt securities.

		Debt Maturity Choice
Variables	**Variable Abbreviation**	Coefficient
Constant	C	3.448***
Inflation	INFLA	0.003
10-Year Gov. Bond Yield	GB_10Y	-0.114***
Term Spread of Interest Rate	GB_TS	0.226***
Credit Spread of Corp. Bond Yield	CS	-0.013***
Market-to-Book Ratio	MB	0.054
Long Term Debt Rating	RATING	0.114
Firm Profitability	PROFIT	-1.469
Firm Size (lagging one period)	LN_TA	0.018
Firm Leverage (lagging one period)	LEVERAGE	-0.346
Dummy_MTN	D_MTN	-0.098
Dummy Mortgage Backed Security	D_MBS	0.610**
Dummy Convertible Bond	D_CB	-0.353***
Dummy Float Rate Notes	D_FRN	-0.950***
	Adj. R-Square	0.174
	Log Likelihood	-325.5
	F-Statistics	8.06
	Prob(F-Statisitcs)	0.00
	Observations	437

*, **, *** denote significance at 10%, 5% and 1% respectively

The overall results from the regression lend strong supports to the maturity-timing hypothesis. Specifically, REITs are shown to gravitate toward the shorter end of the maturity spectrum when the long-term benchmark bond rate (proxied by 10-year Gov.

reasoning is that when, in the course of events, the good news is revealed to the market, short-term debt can be refinanced on favorable terms. Market-to-book ratio is used in a number of subsequent empirical studies to proxy for the "prospects" of the firm. (Copeland, Weston and Shastri, 2004).

bond yield) is high. In addition, we detect a negative and statistically significant relationship between corporate bond credit-spread and the probability of REITs issuing long-term debt, indicating that REITs avoid entering into long-term debt obligations when debt market investors are more risk-averse. This outcome is different from Brown and Riddiough (2003)'s finding of the statistically insignificant relation between REITs debt maturity and credit spread. The difference is mainly attributed to the different sample period covered in their study and ours.[49] At the same time, it also suggests one structural change in REITs debt offering pattern in that they pay more attention to credit spread dynamics now than they did in the past, especially given the trend of rising credit spread demanded by investors in recent years (as in Chart 6.6). In contrast to the result in Baker, Greenwood and Wurgler (2003), current period inflation doesn't play any significant role in affecting REITs debt maturity choices.

The regression also reveals that REITs tend to choose long-term debt over short-term ones when the current term-spread is high. The refinancing-risk hypothesis of Diamond (1991) offers possibly explanation for this positive relationship between term-spread and REITs debt maturity choice. High term-spread often translates into high refinance risk in the future (the expectation hypothesis). This risk of not being able to refinance short-term debt at favorable terms causes firms to seek longer-maturity. In addition, the majority of REITs debts are in the form of fixed-rate (as discussed in Section 5.2), the positive coefficient also suggests that REITs attempt to lock-in current interest rate level in the expectation of rising rates in the

[49] Brown and Riddiough (2003)'s study covers the period from late 1993 to early 1998, while our study examine the whole period from 1986 to 2003. Data from NAREIT reveals that, there are 531 REITs public debt offerings during 1998 to 2003 amounting to US$71.2 billion, in contrast to 406 debt issues during 1993 to 1997 totaling US$30.4 billions.

future.

On the other hand, among the five firm-characteristic controlling variables suggested in previous studies, none is significant in REITs context. These results indicate that, different from the evidences from industrial firms, REITs debt-maturity decisions are more directly linked to debt capital market conditions rather than firm specific factors, which reinforces the market-timing hypothesis.

7.3 The Determinants of Issuance (Repurchase) Size

The analysis in Section 7.1 did not explicitly consider the size of the financing activities. In other words, we only examine REITs market-timing activities by investigating their choices of when and what to issue or repurchase, while leaving the question of how much unanswered. Do REITs also time favorable market conditions in deciding the size of the securities to issue/repurchase? For instance, raising more capital than they actually need when capital market conditions are extremely favorable? This section tries to answer this question by identifying the determinants of REIT's financing transaction size. Specifically, OLS regressions employing firm-quarter observations are used to consider whether those factors affecting REITs' choices of the timing and form of financing also influence the size of issues (repurchases). To reduce the potential heteroscedasticity problem, relative issuance/reduction size (dollar amount scaled by total-assets) is used, as in Hovakimian, Opler and Titman (2001).

The regression results are presented in Table 7.5. Overall, the outcome of size regression supplements previous evidence of REITs market timing. Specifically, REITs raise significantly larger amount of equity and debt capital when market-to-book ratio (M/B) is high. This is consistent with the finding in Hovakimian, Opler and Titman (2001). In addition, the results also suggest that higher current period term-spread increases the size of equity issuance, while larger credit-spread acts in the opposite direction. However, influences of other capital market variables which are found important in the time and form choices of financing activities are muted in the size regression. In particular, stock price returns, which are shown to be among the most import timing considerations, cease to play important role in deciding the size of REITs equity offer (although they are still significant in net debt increase regression).

Table 7.5 Issuance/Repurchase Size Regression

The sample sizes (number of observations) are automatically adjusted in the econometric software to include only those observations for which all explanatory variables are available, e.g.. there are totally 767 equity issues identified in our study, the 588 events included in this regression are those for which data for all independent variables are available, for those excluded, some of the explanatory variables (for instance, the firm profitability or price-return of the previous 4 Quarter) are not available. Pooled least square regression with Newey-West HAC Standard Errors & Covariance are used.

		Equity Issuance		**Equity Repurchase**		**Net Debt Increase**		**Net Debt Reduction**	
Variables	**Variable Abbr.**	**Spec. (1)**	**Spec.(2)**	**Spec. (1)**	**Spec.(2)**	**Spec. (1)**	**Spec.(2)**	**Spec. (1)**	**Spec.(2)**
Constant	C	0.355***	0.310***	0.062	0.087*	0.142***	0.158***	0.112***	0.090***
M/B Ratio	PB	0.007***	0.007***	0.002	0.001	0.006***	0.005***	-0.001	-0.003
Dividend Yield	DY	--	0.004*	--	-0.001*	--	0.000	--	0.000
P/E Ratio	PE	0.000	--	0.000	--	0.000	--	0.000	--
Firm Price Return Previous 4Q	PR_4Q	0.017	0.045***	-0.049*	-0.034	0.051***	0.042***	0.013	0.001
S&P 500 Return Previous 4Q	SP_R4Q	0.000	0.006	0.080*	0.064*	0.016	0.014	-0.003	0.006
NAREIT Return Previous 4Q	NAREIT_R4Q	0.038	0.019	0.106*	0.072	-0.023	-0.014	0.013	0.018
Return for Fama-French Size Factor	FF_SMB	-0.064	-0.087	-0.010	0.007	-0.102***	-0.088***	0.035	0.006
Return for Fama-French Growth Factor	FF_HML	-0.044	-0.001	0.011	0.010	-0.038	-0.048*	0.051	0.056
10-Year Gov. Bond Yield	GB_10Y	0.006	0.007	-0.003	-0.004	0.000	-0.002	0.004	0.002
Term Spread of Interest Rate	GB_TS	0.021***	0.023***	0.009	0.006	0.005	0.004	0.004	0.007
Real Short Term Interest Rate	REAL_GB_3M	0.002	0.002	0.004***	0.003*	0.001	0.001*	0.000	0.000
Credit Spread of Corp. Bond Yield	CS	-0.001**	-0.001***	0.000	0.000	0.000	0.000	0.000	0.000
Long Term Debt Rating	RATING	-0.033***	-0.032***	-0.008	-0.001	-0.006	-0.004	-0.003	-0.004
Firm Profitability	PROFIT	-0.087	-0.060	-0.018	-0.019	-0.077	-0.029	0.022	0.110*
Firm Size (lagging one period)	LN_TA	-0.029***	-0.026***	-0.003	-0.004	-0.009***	-0.010***	-0.011**	-0.008**
Firm Leverage (lagging one period)	LEVERAGE	-0.152***	-0.146***	-0.077***	-0.064***	-0.051***	-0.049***	0.015	0.033
	Adj. R-Squares	0.295	0.311	0.250	0.200	0.101	0.102	0.085	0.090
	Log Likelihood	628.05	668.10	173.07	191.76	1805.84	1947.13	625.52	747.11
	F-Statistic	17.39	19.83	2.82	2.51	10.47	11.40	3.70	4.43
	Prob(F-Statistic)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Obs.	588	628	83	92	1266	1379	438	523

*, **, *** denote significance at 10%, 5% and 1% respectively

On the other hand, firm-characteristic variables also have considerable explanatory power in the size regression. For instance, in equity issuance activities, REITs that are none investment-grade rated, smaller in size, or have low leverage-ratio prior to the issuance tend to raise more equity relative to their total-asset value. Similarly, in net debt increase cases, smaller REITs with low debt-ratio incline to issue more. Taken together, these results suggest that, this type of issuers tend to get more capital once they are given the opportunity to access the public capital market. However, the models and variables we specified seems to work better in issuance decisions than in repurchase cases.

7.4 Chapter Summary

This chapter examines REITs financing activities from various perspectives of market-timing. Section 7.1 employs multinomial logistic model to simultaneously examine REITs' strategic choices of the time to issue/repurchase and the choices between debt and equity form. Section 7.2 further looks at one particular aspect of debt market-timing: the choices between long and short-term public debt. Finally in Section 7.3, determinants of the size of external capital raised/retired are modeled.

Results about the equity valuations variables show that, REITs stock offering decisions are shown to be significantly driven by temporarily high equity valuation. Specifically, when current P/E ratios are high, REITs are more inclined to issue equity and favor equity over debt once they decide to raise external capital. In addition, consistent with Hovakimian, Opler and Titman (2001), REITs are shown to issue significant larger amount of equity and debt when their market-to-book ratios is high.

Evidences about stock returns further reveal REITs initiatives in market-timing. REITs tend to issue equity securities when their own share price as well as the general stock market experienced significant appreciations during the four quarters prior to the issuance. In addition, REITs choices of the time to issue debt are also significantly affected by general stock market returns. Results for Fama-French size factor-return suggest that, REITs also time the dynamics in investors' risk appetite in their security offering. Specifically, REITs are found to refrain from issuing either equity or debt when the Fama-French size factor-return is high, indicating that REITs hold-back their security offerings when investors rotate out of safer sectors into more riskier asset classes.

REITs defer their decisions to raise external capital (both debt and equity capital) when the long-term government bond yield is high, and choose shorter term debt securities if they issue public debt in periods of high long-term rate. On the other hand, our results suggest that REITs are more likely to issue equity securities (most likely to buy new properties) in the face of rising real short-term rate, which is potentially associated with brighter outlook of the investment-property sector.

The empirical results reveal that term-spread of interest rate is among the most important factors REITs consider in their market-timing. Specifically, REITs are more likely to issue equity and raise a significant larger amount when current term-spread is high. In addition, REITs tend to choose long-term over short-term debts in the face of a steeper yield curve.

REITs financing activities, particularly debt offerings, are sensitive to changes in bond market credit spread: REITs defer their decisions to increase debt in periods of high

credit spread. Even if debt capital is finally chosen, a shorter maturity-term is chosen during such period.

Results for firm characteristic controlling variables suggest that investment-grade rated REITs tend to be more active equity issuers. In addition, they favor equity to debt capital when raising external capital. However, better rated REITs as well as larger REITs are shown to raise less equity capital relative to their total asset size compared with their non-investment grade or smaller counterparts. REITs profitability, measured as net income, is shown to be negatively associated REITs propensity to raise external capital. This result confirms our prior discussion about the reliance on external capital of REITs due to the high pay-out requirement: REITs that generate less cash-flow from operations tend to be more active capital market visitors. Finally, our results suggest that REITs seem to try to stay within an optimal debt range in that higher pre-offer leverage ratio significantly increases the probability of REITs debt reduction.

Part IV: Summary and Conclusions

CHAPTER EIGHT

Summary of Main Findings

A thorough understanding of REITs financing decisions is paramount considering the capital-intensive nature of REITs business and their heavy reliance on external capital for growth. However, at current stage, the number of researches comprehensively studying the financing decisions of REITs is still limited compared with the volume of capital structure literature using pan-industry data. The few ones about REITs securities offering focus more on how such offering affect REITs share price, rather than on the motives and patterns of such fund raising activities per se. Our study examines REITs financing activities from the market-timing perspective by exploring how the decisions of REITs' financing activities are made in relation to the cost of these securities, as well as the conditions in the capital markets.

Traditional capital structure theories either approach firm financing and leverage decisions from a trade-off perspective, or suggest that there is a pecking-order in firm's preference for different forms of capital due to information asymmetry. However, in the situation of REITs, the avoidance of corporate tax eliminates the tax benefit of debt borrowing. Furthermore, high dividend distribution requirement for REITs greatly limits their ability to finance business growth with retained earnings. As a result, REITs have to go to public capital market for funds more frequently than companies in other industries, and will probably monitor capital markets more closely to take advantage of any inefficiency in the pricing of the securities being offered.

Accordingly, a capital structure theory that looks at this problem from the capital market perspective, rather than focusing on either the cost-and-benefit of debt borrowing, or information asymmetry between managers and investors, is needed to better understand REITs financing decisions.

Market-timing hypothesis of capital structure theory, which originates from a growing body of literature in the financial economics about the implication of capital market inefficiency in the valuations of corporate securities on firm financing decisions, offers a better framework than previous theories to describe and model REITs financing behaviors. This hypothesis relaxes the assumption of market efficiency characterizing previous capital structure theories, and argues that firm chooses the time and form of external financing to take advantage of the variations in their relative costs in the capital market, which are possibly caused by capital market inefficiency.

Correspondingly, this study conducts an extensive examination of the market-timing initiatives in U.S. REITs financing activities during the period from 1986 to 2003. By linking REITs financing decisions to a large number of variables reflecting equity market valuation and returns as well as debt capital market yields and spreads, we model REITs' choices of the time and form of securities to issue/repurchase with regard to the relative cost of such securities in the capital market.

Our analysis of the financing patterns of REITs reveals that, after the real estate crisis of 1988-1992, U.S. REITs industry began to tap public capital market for funds. However, REITs financing pattern has undergone structure changes during the nearly two-decade time of 1986 to 2003. Industry-aggregate data show that, equity capital plays a more important role than debt during the earlier period of REITs industry

development. Nevertheless, starting from 1999, REITs turned increasingly to public debt market for capital. In particular, unsecured, median- to long- term fixed-rate public debt is the favored form of REITs financing in recent years.

However, both equity and debt offering activities exhibit considerable volatility throughout the studying period, suggesting that REITs financing decisions are closely linked to the dynamics in both equity and debt capital market. In the subsequent analysis using individual-firm level data, our results demonstrate that REITs exhibit strong market-timing initiatives in carrying out their financing activities. Specifically, the empirical results show that REITs time their equity offering with periods of buoyant valuation and sharp run-ups in their stock price in the market, and issue debt securities when the long-term rate is low and the credit spread is narrow, while both debt and equity securities are offered when investors are more risk-averse. In addition, REITs also time debt market conditions by means of debt-maturity choices: choosing long-term debt over short-term ones when the long-term rate and credit-spread is low, and the current term spread is high.

We conclude that market-timing hypothesis better describes REIT financing activities than either the trade-off theory or the pecking-order hypothesis. Our analysis from the capital market perspective uncovers another important aspect of REIT financing decisions, which complement previous studies and help us to achieve a better understanding of REIT financing decisions. Further, this evidence about market-timing from a particular industry which is a potentially better testing ground provide strong empirical support to the development of market-timing theory, as well as a number of recent empirical works on the market timing hypothesis.

CHAPTER NINE

Limitations and Further Recommendations

Unlike many studies in the asset-pricing field, research question and hypothesis of empirical research in corporate finance often can not be easily expressed in a single equation or rest on the significance of a particular coefficient. As Myers (2003) contends: "Financing is half of the field of corporate finance. If half of such a broad and exciting field can be compressed into a simple equation or two, then the field itself cannot be very interesting." Rather, we have to dig from a number of different perspectives to finally unveil the true face (hopefully) of firm decision making process. The various models focusing on different perspectives of the market-timing hypothesis, as well as the selection of the independent variables draw heavily on existing empirical studies on this subject, most notably Hovakimian, Opler and Titman (2001) and Huang and Ritter (2004). Empirical research about the market-timing hypothesis is still in its infancy stage, a model that is plausible today may be subject to severe criticism tomorrow, as evident in Shyam-Sunder and Myers (1999) and Chirinko and Singha (2000). Thus, further development in the literature about this topic, as observed during the thesis writing process, will hopefully offer better empirical testing framework.

Our study didn't separate equity REITs in different property sectors, mainly due to the limited number of REITs firms in each sub-sector and shorter time frame when data is available. However, different property sectors have distinctive dynamics in their fundamentals, which will probably affect each REIT's financing decisions. With the continuing rapid growth of the REIT industry, further studies might have sufficient

data to carry out sector by sector analysis, and this will hopefully yield more insights.

Two follow-up questions about market-timing are (1)How successful is the market-timing initiative from the firm's perspective? and (2)What is the impact of the timing on firm's capital structure? We tried the method suggested in Loughran and Ritter (1995) by looking at the long-term performance of the issuers' shares vis-à-vis the none-issuers. However, the calculation of the long-term portfolio performance is plagued by the problem of the "self-reinforcing" process, i.e. the overlapping in the long-term security performance due to the high incidence of the same REIT issues frequently within the five-year framework suggested in Loughran and Ritter (1995). Subsequent studies that are able to device ways of correctly measuring such performance will yield more insights into the market-timing activities.

Our study focuses exclusively on the U.S. REITs market. However, researches about the financing decisions of listed property companies elsewhere are also very scarce. In particular, Asia listed property companies account for a significant portion of the market capitalization, yet differ significantly in their organizational structure from REITs in the U.S. In addition, the Asia capital market is markedly different from its U.S counterpart in terms of depth, liquidity and market efficiency. For instance, two of the most prominent features in Asia are the disproportional development of the equity market and corporate debt market, as well as the reliance on bank debt capital.

Myers (2003) pointed out that, most tests of capital structure theories have examined debt-ratios of established public U.S corporations. The firms are assumed to have access to "Anglo-Saxon" capital markets and institutions, characterized by a broad, efficient public market for shares and corporate debt, and by reasonably good

protection of the rights of outside investors. However, in many Asia markets, the assumption that firms have access to a reasonably well functioning capital market is not true. In countries with limited public capital markets, firms may be forced to rely on bank debt. As a result, the level of bank debt would reveal cumulative requirement for external financing. Similarly, the debt-ratio and financing decision would not be a strategic choice, but an end result forced by market imperfections. What's more, corporate governance measures and capital market inefficiency in certain Asian markets suggest an even more severe asymmetric information problem. Thus, "exporting" capital structure theory into developing Asian markets will further contribute to the capital structure literature.

ENDNOTES

1. In the U.S., in order to qualify as a REIT and gain the advantages of being a pass-through entity free from taxation at the corporate level, a corporation must comply with the following Internal Revenue Code provisions:
   a) Structured as Corporation, business trust, or similar association
   b) Managed by a board of directors or trustees
   c) Shares need to be fully transferable
   d) Minimum of 100 shareholders
   e) Pays dividends of at least 90 percent of REIT's taxable income (the distribution requirement before 2000 was 95 percent)
   f) No more than 50 percent of the shares can be held by five or fewer individuals during the last half of each taxable year
   g) At least 75 percent of total investment assets must be in real estate, mortgage, REITs shares, government securities, or cash.
   h) Derive at least 75 percent of gross income from rents or mortgage interest
   i) Have no more than 20 percent of its assets consist of stocks in taxable REIT subsidiaries

2. Definition of Long-Term Debt Issuance and Reduction in COMPUSTAT

Long-Term Debt – Issuance (Statement of Cash Flows). This item represents the amount of funds generated from issuance of long-term debt.

This item includes:

a) Change in debt not classified into current and long-term debt
b) Change in long-term debt when combined with current debt
c) Increase in combined long-term and short-term debt
d) Line of credit or Revolving loan agreements if presented as long-term debt on the Balance Sheet
e) Long-term debt issued for or assumed in an acquisition
f) Long-term debt and warrants (if warrants are attached to the issuance of debt)
g) Proceeds from bonds, capitalized lease obligations, or note obligations
h) Proceeds from private placement
i) Reclassification of current debt to long-term debt

Long-Term Debt – Reduction (Statement of Cash Flows). This item represents a reduction in long-term debt caused by its maturation, payments of long-term debt, and the conversion of debt to stock.

This item includes:

a) Conversion of debt to common stock
b) Change in debt not classified as either current or long-term debt on a Cash by Source and Use of Funds Statement (Format Code = 2), a Cash Statement by Activity (Format Code = 3), or a Statement of Cash Flows (Format code = 7)
c) Change in long-term debt (when combined with change in current debt)
d) Current maturities of long-term debt for companies that report a Working Capital Statement (Format Code = 1)
e) Decrease to long-term debt accounts
f) Reclassification of long-term debt due to Chapter XI bankruptcy proceedings
g) Transfer or reclassification of long-term debt to current liabilities

3. Measures of REITs Profitability

a) Net Income

As in any industry, Net Income is the primary profitability measure. Defined under current Generally Accepted Accounting Principles (GAAP), Net Income is calculated under the assumption that the value of income-producing properties, the principal assets of some real estate companies and most REITs, diminish over time. Consequently, net income does not reflect holding gains on unsold properties. Additionally, it includes a periodic charge for depreciation even for properties that have appreciated. Thus, net income is often considered to understate profitability due to the inclusion of a depreciation charges. This understatement is sometimes deemed by real estate professionals to have impaired the ability of investors to value real estate firms and hence reduced these firms' access to capital markets (Brenner, (1984)).

b) FFO

FFO is a supplemental profitability measure for REITs' financial performance advanced by NAREIT. Many real estate professionals as well as investors believe that commercial real estate maintains residual value to a much greater extent than machinery, computers or other personal property. Therefore, they think that the depreciation measure used to arrive at GAAP Net Income generally overstates the economic depreciation of REIT property assets and the actual cost to maintain and replace these assets over time, which may in fact be appreciating. In 1991, the National Association of Real Estate Investment Trust issued its first definition of FFO in an industry white paper (NAREIT, 1991). NAREIT defined FFO as net income, computed in accordance with Generally Accepted Accounting Principles (GAAP), plus depreciation and amortization, and adjusted for gains/losses from debt restructuring and sale of properties, and income/loss related to unconsolidated partnerships and joint ventures. Because FFO excludes certain non-recurring items (e.g. gains and losses on debt restructuring) from net income, it potentially captures the more permanent of net income. Reporting FFO is so widespread in U.S. REITs industry that security analysts who follow REITs frequently forecast FFO instead of net income. However, FFO does have its shortfalls, as different REITs companies are not consistent in terms of the nature of items they remove from net income to derive FFO. Further, FFO is not considered a GAAP measure by either the Financial Accounting Standards Board (FASB) or the Securities and Exchange Commission (SEC) and hence its calculation and presentation is not subject to either consistent rules or an independent audit. However, when real estate companies use FFO in public releases or SEC filings, the law requires them to reconcile FFO to GAAP Net Income. But only recently has U.S. REITs began reporting this information on a consistent basis and the COMPUSTAT do not include a field in the data records for NAREIT funds from operations.

c) Free Cash Flow

Free Cash Flow is defined as Cash Flow from Operations (Operating Cash) minus Capital Expenditure. Alternatively, it can also be obtained by adding back Depreciation/Amortization to Net Income, then deducting Change in Working Capital and Capital Expenditure. Free Cash Flow signals a

company's ability to pay debt, pay dividends, buy back stock, and facilitate the growth of the business—all important undertaking from an investor's perspective. By establishing how much cash a company has after paying its bills for ongoing activities and growth, Free Cash Flow is a measure that aims to cut through the arbitrariness involved in reported earnings. Regardless of whether a cash outlay is counted as an expense in the calculation of income or turned into an asset on the balance-sheet, free cash flow tracks the money.

d) Operating Cash Flow

Operating Cash Flow is the lifeblood of a company and is often regarded as the most important barometer by investors. It is argued that for two reasons, Operating Cash Flow is a better metric of a company's financial health than Net Income. First, cash flow is harder to manipulate under GAAP than net income. Second, cash generating ability is often regarded as most important metric of a firm by investors.

The statement of cash flows for non-financial companies consists of three main parts:

1. Operating Cash Flows: The net cash generated from operations (net income and changes in working capital).

2. Investing Cash Flow: The net result of capital expenditures, investments, acquisitions, etc.

3. Financing Cash Flow: The net result of raising cash to fund the other flows or repaying debt.

By taking net income and making adjustments to reflect changes in the working capital accounts on the balance-sheet (receivables, payables, inventories) and other current accounts, the operating cash flow show how cash was generated during the period. It is this translation process from accrual accounting to cash accounting that makes the operating cash flow important.

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